Rapid Transit Service Sufficiency Study

JUNE 1984

Draft Final Report

New York City Transit Authority

Department of Planning and Budget

New York City
Transit
Authority

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PREFACE

RAPID TRANSIT SERVICE SUFFICIENCY STUDY

The draft final report of the Rapid Transit Service Sufficiency Study presents several proposals to change train routings to reflect certain changes in passenger travel patterns and needs.

The Study, begun in 1978, deals with reroutings of existing services and does not represent a comprehensive proposal for all possible or necessary improvements in service patterns, nor does the Study deal with rationalization of the Rapid Transit and Bus Systems. Moreover, utilization of the new 63rd Street Tunnel is not addressed.

The data and analysis upon which the proposed train reroutings are based in the report will become a base on which to build future service planning efforts, using a data base previously unavailable to the Transit Authority.

At this time, the Authority's highest priorities are to restore the structural integrity of the Rapid Transit System and to improve service reliability to acceptable levels. These efforts must take precedence over route and service changes which do not directly address these basic priorities. The Authority will establish in 1985 an Operations Planning Department within the Operating Division with improved capability of analyzing and proposing needed service changes. The new organization will increase management and technical expertise in the area of service planning. The new managers will use the Study's information and recommendations to help implement, on an incremental basis, the service adjustments required throughout the Authority.

In the interim, the Authority will focus on the other aspects of service sufficiency that directly affect improving the state of the System. The data base compiled in the course of this Study will continue to be used in the Authority ongoing service planning efforts. Further, the proposals outlined herein will be periodically reevaluated as potential elements of future service improvements designed to address the overriding priority of the Authority — providing efficient and reliable transit service to New York City.

David L. Gunn
President
New York City Transit Authority

December 20, 1984

FINAL DRAFT REPORT

CITY-WIDE RAPID TRANSIT SERVICE SUFFICIENCY STUDY

UMTA Project No. IT-09-0046/89 C-670

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PARTICIPATING AGENCIES
U.S. Department of Transportation
Urban Mass Transportation Administration
Tri-State Regional Planning Commission
New York City Transit Authority

PREPARED BY THE
NEW YORK CITY TRANSIT AUTHORITY
DEPARTMENT OF PLANNING AND BUDGET
OPERATIONS PLANNING GROUP

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TABLE OF CONTENTS

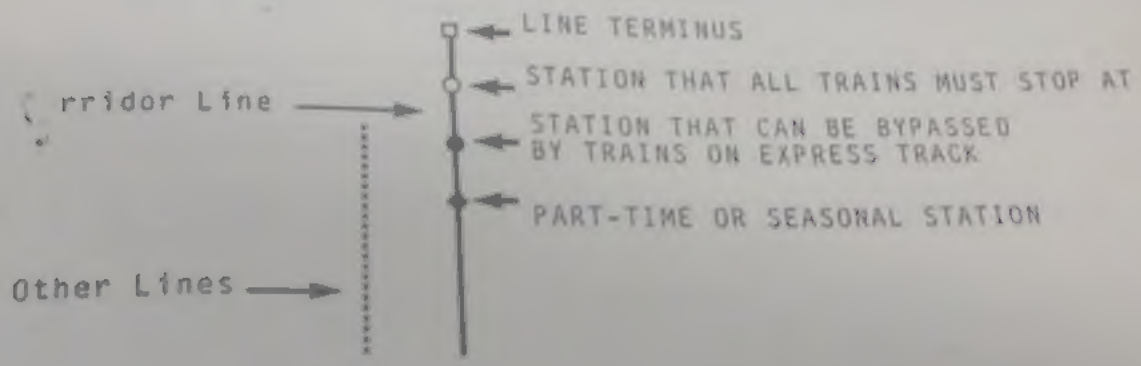
4172-5.4

TABLE OF FIGURES

TABLE OF FIGURES
(Continued)

EDITOR'S NOTE: The RTSSS alternatives analysis was completed in March 1983. Costs, operations, and ridership figures described in this report reflect that date, unless otherwise noted

LEGEND FOR CORRIDOR MAPS



EXECUTIVE SUMMARY

In September 1978, the New York City Transit Authority initiated the Rapid Transit Service Sufficiency Study (RTSSS), the first comprehensive, systemwide origin-destination survey in the history of New York City's rapid transit system. Its purpose was to appraise the overall effectiveness and sufficiency of rapid transit services and restructure those services in a manner more responsive to passengers current travel patterns, within the limits of the Authority's available resources (that is: labor, cars, and financing). Its objectives were:

- To assemble a comprehensive data base for rapid transit route and service planning.
- To assess and analyze the sufficiency of the existing rapid transit route structure.
- To improve the cost-effectiveness and attractiveness of rapid transit operations.
- To analyze and improve access to subway stations.
- To increase community input to the rapid transit service planning process.

As proposed, RTSSS would first assemble a data base containing the existing trip-making patterns of rapid transit riders and other characteristics relating to the current rapid transit system. The major input to this data base would come from a series of comprehensive origin-destination surveys, encompassing weekday, weekend, and seasonal travel.

The systemwide survey distributed survey cards at every rapid transit station between 6AM and 2PM---times chosen to represent the period when approximately 40 percent of the daily ridership enters the system. A mail-back survey card was selected as the most practical survey instrument. Cards were distributed to entering passengers at almost every control area in the system. The systemwide survey distributed survey cards to 62 percent of the passengers entering during the Study.

The systemwide survey was conducted from March 26 to May 15, 1979. A series of limited supplemental surveys were conducted, including an on-board survey of selected evening trains, a survey distribution at selected stations on weekends, a survey conducted at stations serving beach areas, and a theatre survey at selected subway stations serving major evening cultural centers.

The data collected by the origin-destination surveys was organized into a useful data base for route and service alternatives. Computer programs were developed to produce a number of output tables from the data base. The output tables organized the study data base into useful summaries and correlations for analysis. A full description of the output tables and results of each are contained in Appendix A.

With the RTSSS data base established, existing operations and trip-making patterns were examined in order to match service levels with identified demand. The Study used the following guidelines for evaluating route and service change proposals:

- To provide routes that reflect the current travel patterns of passengers, minimizing transfers.
- To provide a level of service on each line that better matches the identified demand for service.
- To simplify the route structure.
- To maintain or improve the operating efficiency of the rapid transit system.
- To remain within the current budget and physical plant for rapid transit operations.
- To avoid unnecessary disruptions of present services without clearly demonstrated reason.

Disparities between existing service patterns and service demand were identified by applying information from the RTSSS data base. Once identified, route and service alternatives were developed and reviewed for advantages and disadvantages. The proposed alternatives provide the greatest benefit and the least disbenefit to the riding public, while staying within the Study guidelines for route and service changes.

The Study presents several proposals to change train routings which will better reflect actual passenger travel patterns. The proposals deal exclusively with train routing issues and are based on data collected in 1979. They do not represent the sum total of all possible or needed improvements to the system. The following route and service changes were proposed by the Study:

"A" - Operate the off-peak "A" local between 59 Street/Eighth Avenue and Chambers Street.

"AA" - Replace the "AA" with the extended "B" north of 59 Street/Eighth Avenue, and with the off-peak "A" local service south of 59 Street/Eighth Avenue.

"B" - Operate the "B" as a Sixth Avenue Express between 168 Street and Coney Island at all times (except nights).
- Replace the "B" night shuttle to 57 Street/Sixth Avenue with the "F".

"D" - Operate the "D" local on Sixth Avenue at nights (between 1AM and 5AM).

"F" - Extend the hours of "F" express service in Queens until 1AM.

- Turn the "F" at 57 Street/Sixth Avenue at nights (between 1AM and 5AM)

"GG" - Turn the "GG" at Queens Plaza evenings (9PM weeknights, 8PM Saturdays, 7PM Sundays).

"J" - Extended peak "J" express service to operate between Marcy Avenue and Eastern Parkway.

- Replace off-peak "J" service with the "K".

"K" - Operate the "K" local between 57 Street/Sixth Avenue and:

- Rockaway Parkway (Canarsie) during peak periods.

- Queens Blvd-Jamaica Avenue, all other times (except nights).

"LL" - Originate or terminate some peak period trips at Atlantic Avenue.

"M" - Extend the "M" to Broad Street during evenings and weekends (except nights).

"N" - Operate the "N" as a Broadway Express between Astoria and Coney Island at all time ("N" night shuttle on the Sea Beach Line is no longer required).

- All "N" trains stop at 49 Street/Seventh Avenue.

- Replace the "N" Whitehall Specials with the "V".

"RR" - Operate the "RR" as a Broadway Local between 71-Continental Avenues and 95 Street/Fourth Avenue, at all times.

- Extend the "RR" to 179 Street at all times, when the "F" turns at 57 Street/Sixth Avenue.

- Replace the "RR" Chambers Street Specials ("RJ") with the "T".

"T" - Operates local between Chambers Street and Bay Parkway/86 Street during peak periods in the peak direction.

"V" - Operate the "V" as a Broadway Local between Astoria and Whitehall Street during peak periods in the peak direction.

[illegible]

[illegible] the N[illegible] passen[illegible] [illegible]ings. in New [illegible] [illegible]ed at al[illegible] [illegible]s and Acc[illegible] [illegible]us hourly, week[illegible] [illegible]ts. Informati[illegible] [illegible] Rapid Tran[illegible] [illegible]ins entering the [illegible] [illegible] at other locatio[illegible]

These sets of data [illegible] [illegible]cisions regarding hea[illegible] [illegible]ute and service plan[illegible] [illegible]etailed descriptions [illegible] [illegible]apid transit passengers [illegible]

The Authority recognized the need for a reliable [illegible]ision-making [illegible] [illegible]nges. [illegible] [illegible] [illegible] Suffi[illegible] [illegible] origin-destination survey in the history of New York City's rapid transit system.

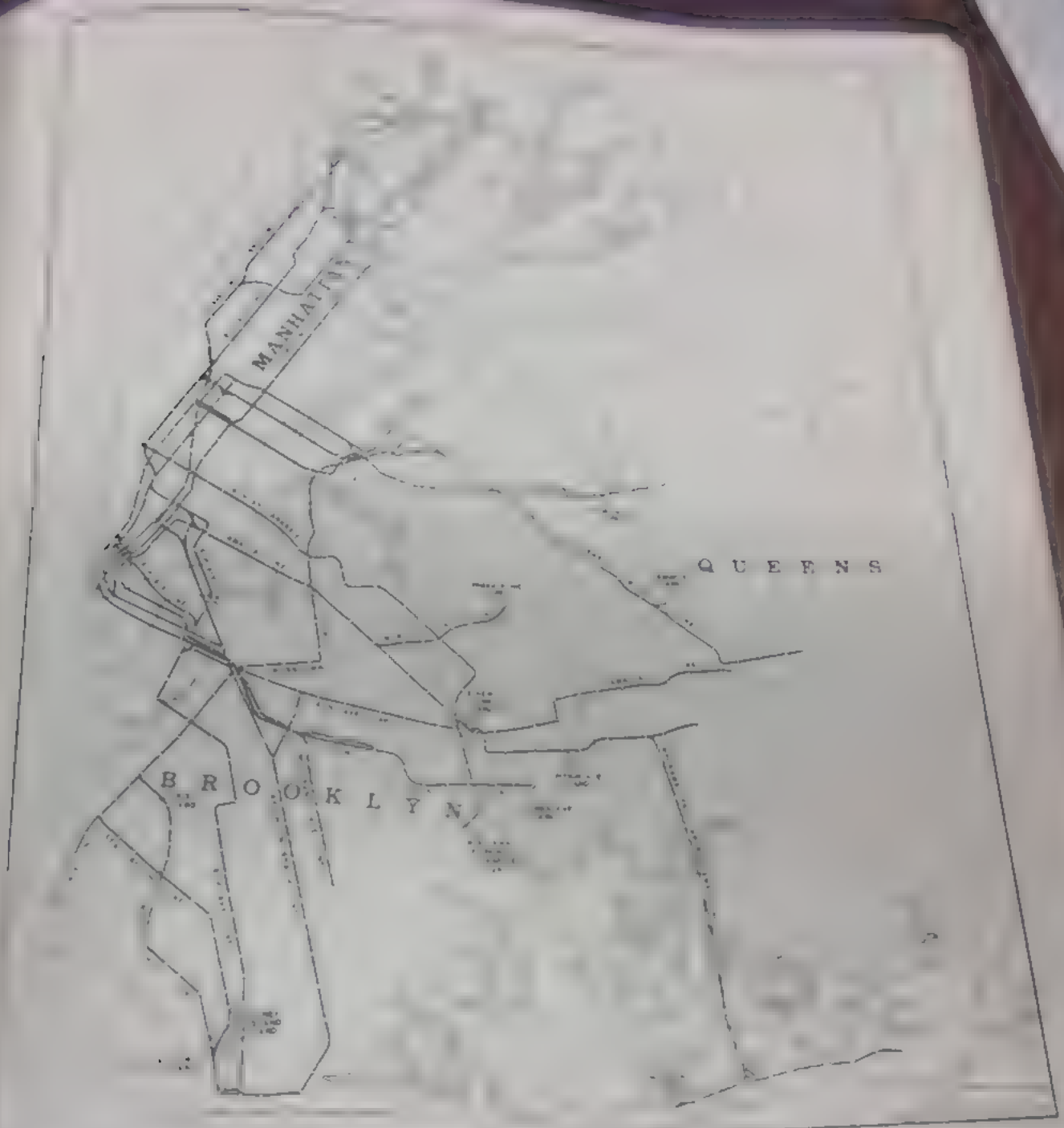
Study Purpose and Objectiv[illegible]

The purpose o[illegible] Service Sufficiency Study [illegible]SS) is to appr[illegible] all effectiveness and [illegible]ncy of rapid transit servi[illegible] and restructure those [illegible] in a manner more responsive to passengers travel [illegible], within the limits of the Authority's current [illegible] that is: labor, cars, and financing). The [illegible]biectives of the Study were

To assemble a comprehensive data base for rapid transit route and se[illegible]

To assess and [illegible] the sufficiency of the existing rapid transit rout[illegible]

The Manhattan [illegible] East and Hudson [illegible] [illegible]hattan and the [illegible]



NYCTA Rapid Transit Lines

1

[illegible] Study [illegible]
[illegible] trip [illegible]
[illegible] trip [illegible]
[illegible] Service [illegible]
[illegible]. The major [illegible]
[illegible]ries of comprehe[illegible]
[illegible]ompassing week[illegible]
[illegible] a base assembl[illegible]
[illegible]erations and tr[illegible]
[illegible] match service [illegible]

[illegible] Origins

The Authority undertook [illegible] program of [illegible]ansit studies that were designed to [illegible]ss and sufficiency of both ra[illegible] [illegible]eratations on a borough by borough basis. With the first [illegible]tudy in the program, the Bronx Study, it became apparent [illegible]pid transit route and service changes could not be adequ[illegible] [illegible]ade on the borough level. Therefore, rapid transit analysis was shifted to a citywide basis in a separate study, RTSSS, which commenced in September 1978.

The Study was conducted by the Operations Planning Group, [illegible] at the time [illegible] part of the [illegible]

The survey design process considered a [illegible] methodologies for a systemwide rapid transit survey. [illegible] he study staff decided that a 24-hour [illegible] of the entire sy[illegible] would not be necessary to ensure a [illegible] would exceed the resources allocated to the study. Alternative means of collecting a smaller sample were [illegible] These [illegible] 24-hour period, surveying the entire system during a limited period, on board survey distributions on all trains or on selected trains, conducting passenger interviews at all stations or at selected stations, and survey distribution by token booth clerks. After analysis, some of these alternatives were rejected for the following reasons:

- Selected Stations: This technique would not be sensitive to the broadly variable demography of New York City, where population density, composition and income levels can change dramatically from one block to another. Using some basic criteria to select [illegible] volumes, demographic [illegible] proximity to traffic generat[illegible]

used in
these

The technique
stribute survey
AM and 2PM (except
ook lunch). These time
turnstile registrations and represent th
approximately 40 percent of the
system (see Figure 2). This period encompasses
orning peak period, a portion of the midday "bas od, and
the morning "shoulder" periods (the transition between
night and peak between peak and base service).

A mail-back survey card was
rvey instrument.
ards were considered to minimize postage costs, but were
rejected due to problems
for littering,
size and durability
personnel costs associated with collecting the boxes and
maintaining their security. By special arrangement with the
Authority's Station partment, however, the mail-back cards
could also be returned ---overall, eight percent
of all responses w

passengers at
entrances
nger

passengers
rate betwe
at many
of
ractical and

RAPID TRANSIT SERVICE SUFFICIENCY STUDY

Entering Weekday Passenger Volumes By Hour

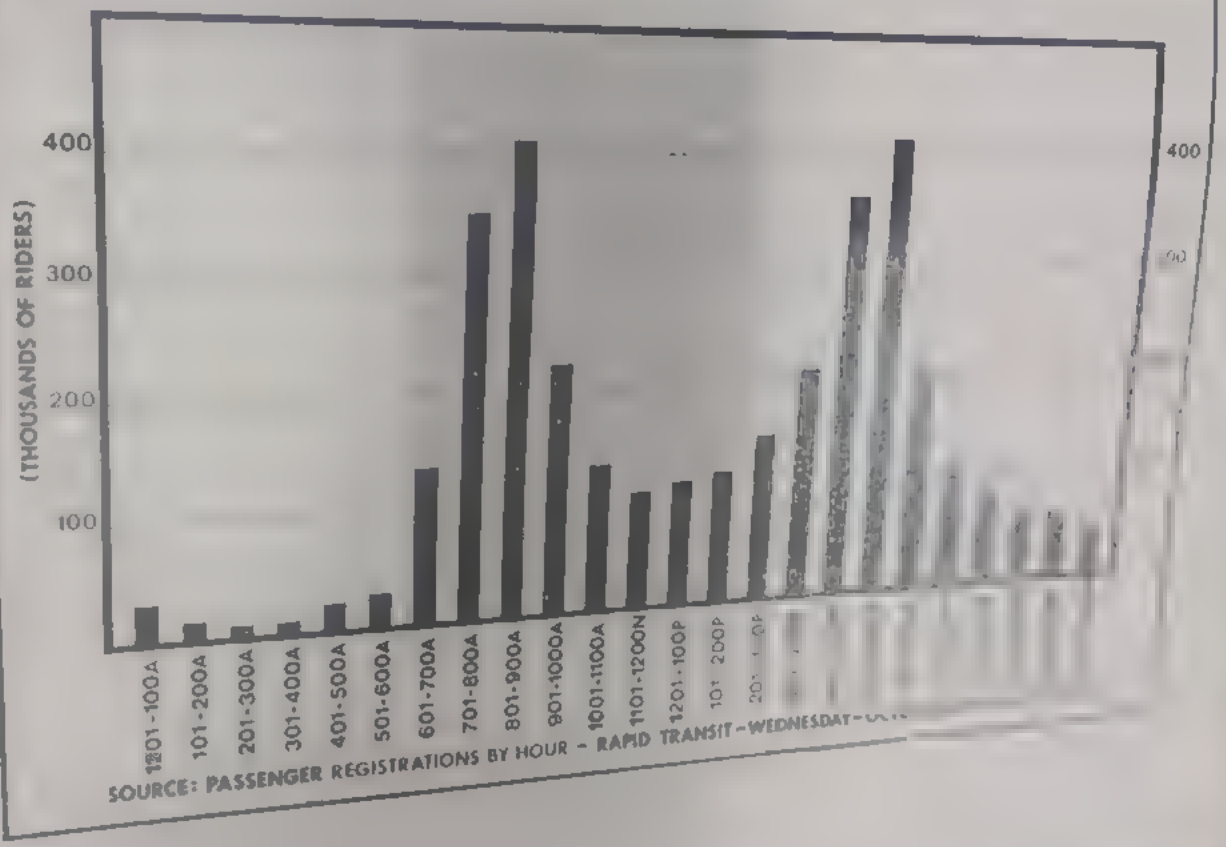


FIGURE 2

New York City Transit Authority

[illegible]

[illegible] ce both a 1[illegible] tribution were ne[illegible] cided to distribute [illegible] passengers possible. A s[illegible] recent origin-destination [illegible] and the [illegible] retrospect, t[illegible] percent of t[illegible] survey cards [illegible]

Hourly turnstile registrations w[illegible] entrance d[illegible] entering passengers during a particular hour.

Survey Card Design

The design of the surv[illegible] instrument was critical since ambiguities in wording o[illegible] ne survey card could result in distorted or useless infor[illegible]. The survey card was designed to collect specifi[illegible] informatic[illegible] the respondent's current transit trip:

BEFORE ENTERING T[illegible] trip, mode [illegible] station, [illegible]

[illegible] B[illegible]

[illegible]

[illegible]

[illegible] may involve s[illegible]
[illegible]mple, a passenger re[illegible]
[illegible]et-South Ferry Station may have just
[illegible]ry. Transferring from the ferry to th[illegible] way involves a
[illegible]-block walk, so the respondent [illegible] te "walking" as
[illegible] mode of access [illegible]
[illegible]scribing an impossible walk across five miles of water [illegible]
each the subway.

All survey cards were sequentially numbered to facilitate [illegible]
[illegible]. Further, [illegible] station and time that each card was distributed. By cross-referencing the actual station and time with that [illegible]icated by [illegible] other co[illegible] "found cards"--card[illegible] forgers and filled [illegible] by others.

[illegible] designated space for [illegible] comments would not b[illegible] [illegible]ented data base designed for [illegible] [illegible] respondents tried to fit comments on [illegible] over the [illegible]rds had to [illegible] now provides some space [illegible] card.

[illegible]

[illegible]t survey w[illegible]
[illegible] card wording and
[illegible]ticality of the distribution pro[illegible]
[illegible]ns were selected for this test to [illegible] patterns that the study staff
[illegible]nborhoods [illegible]
[illegible] to encounter du[illegible]

Pilot
Survey
Card

3

New York City
Transit
Authority

low-income,
ooklyn.

Flatbush Avenue
middle-in
arge number
provided by the
nbalanced and ir

Whitehall Street-South
In the financial district,
transferring from the Staten Island Ferry. High
volumes during rush hours and
outline from
buildings.

Th st survey was
planned for the systemwide survey. the hours

The distribution rate (the percent
stations averaged 89 percent, and
averaged 24.
Nortnern Boulevard
retained
stations were
Manhattan.
distribution

The pilot survey confirmed that the distribution procedure was practical and that y survey card was understandable. Howeve rovements to the card were indicated:

- "PATH" was added as a specific response
  PATH prior to entering the subway.
  riders indicated
  Trade Center).
  respondents to dif
  The word "SUBWAY" transfer.
  Question #4 to cla

[illegible]

[illegible]

[illegible]

[illegible]

The Sy[illegible]
[illegible] daily [illegible]
[illegible] surveying [illegible]
[illegible]ors reported t[illegible]
[illegible]orning prior to 6A[illegible]
[illegible]heir daily supply of surv[illegible]
[illegible]igns, emblazoned with the [illegible]
the survey to incoming passe[illegible]
[illegible]ther sign in Spanish)---in r[illegible]
public acceptance of survey cards. Sur[illegible]
[illegible]identification badges emblazoned with the [illegible]

Public acceptance of the surv[illegible]
[illegible]thority's Publi[illegible] Aff[illegible]
[illegible]r poster annun[illegible]
were displayed [illegible]
about a week before it wi[illegible]. Press releases [illegible] were
[illegible]ssued and letters were sent to local officals, communit[illegible]
[illegible]boards, and civic [illegible] [illegible] participation in the
Study. The surv[illegible] [illegible] received [illegible] and
radio coverage. These efforts ensured public familiarity with
the survey and had a positive effect on the [illegible]
distribution and response rates.

The limited size of the surv[illegible]
bilingual wording and a separat[illegible] card
would have required maintainin[illegible]
to be weighted separately---an unwieldy [illegible]
surveyors. Therefore, a [illegible] was
[illegible] passport [illegible]
[illegible] a letter- [illegible]
[illegible] blanks [illegible]
[illegible]
[illegible]rvey card, not the translation sheet.

[illegible]urveyor was [illegible]
[illegible]ion on a Survey [illegible]
[illegible]eginning at 6AM. the su[illegible]
[illegible]rvey card and readings [illegible]
[illegible]rnstile. This provided the necessary [illegible]
[illegible]puter editing of "found cards" and w[illegible]
response.

Final

Survey

Card

4

New York City
Transit
Authority

RAPID TRANSIT SERVICE SUFFICIENCY STUDY

Survey Announcement Sign

5

New York City Transit Authority

Help to make your trip easier and faster

The Transit Authority is doing a major travel survey to help us plan services better suited to your needs.

Travel survey cards will be distributed at your station. Please fill out the card after you have completed your trip. Turn the card into the booth clerk, or drop it in the mail box provided.

Thank you for your cooperation.

Surveyor Report Sheet

Transit Authority

STATION
TIME
DATE
BOOTH NO.
WEATHER

TURNSTILE NUMBER

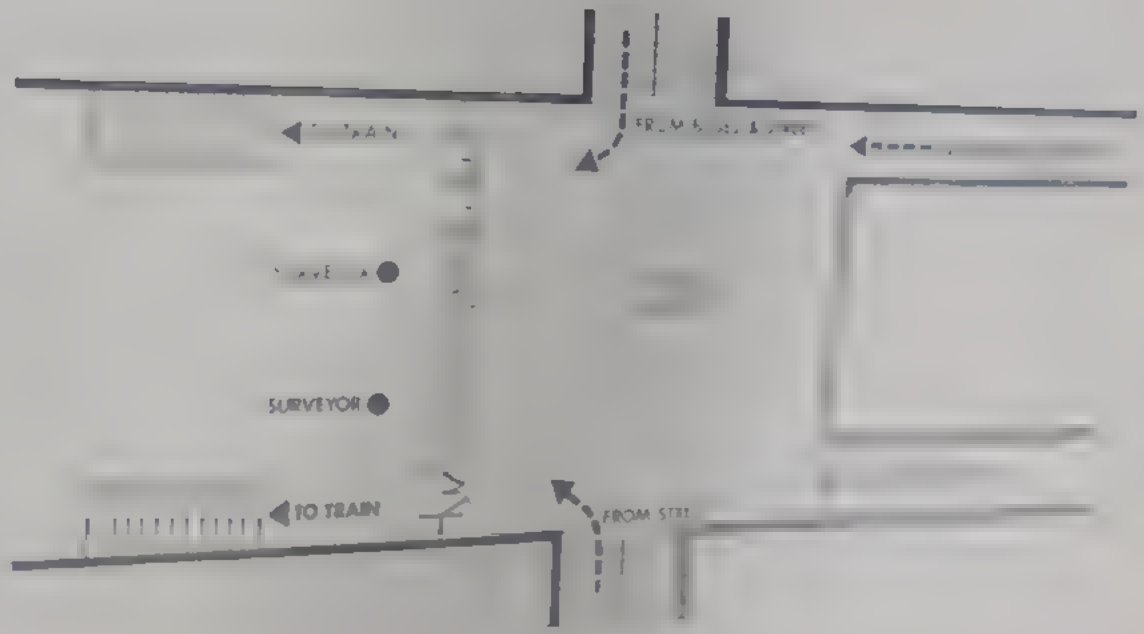
TURNSTILE READINGS

OPERATIONS PLANNING

SURVEY DISTRIBUTION

RAPID TRANSIT
SERVICE SUFFICIENCY

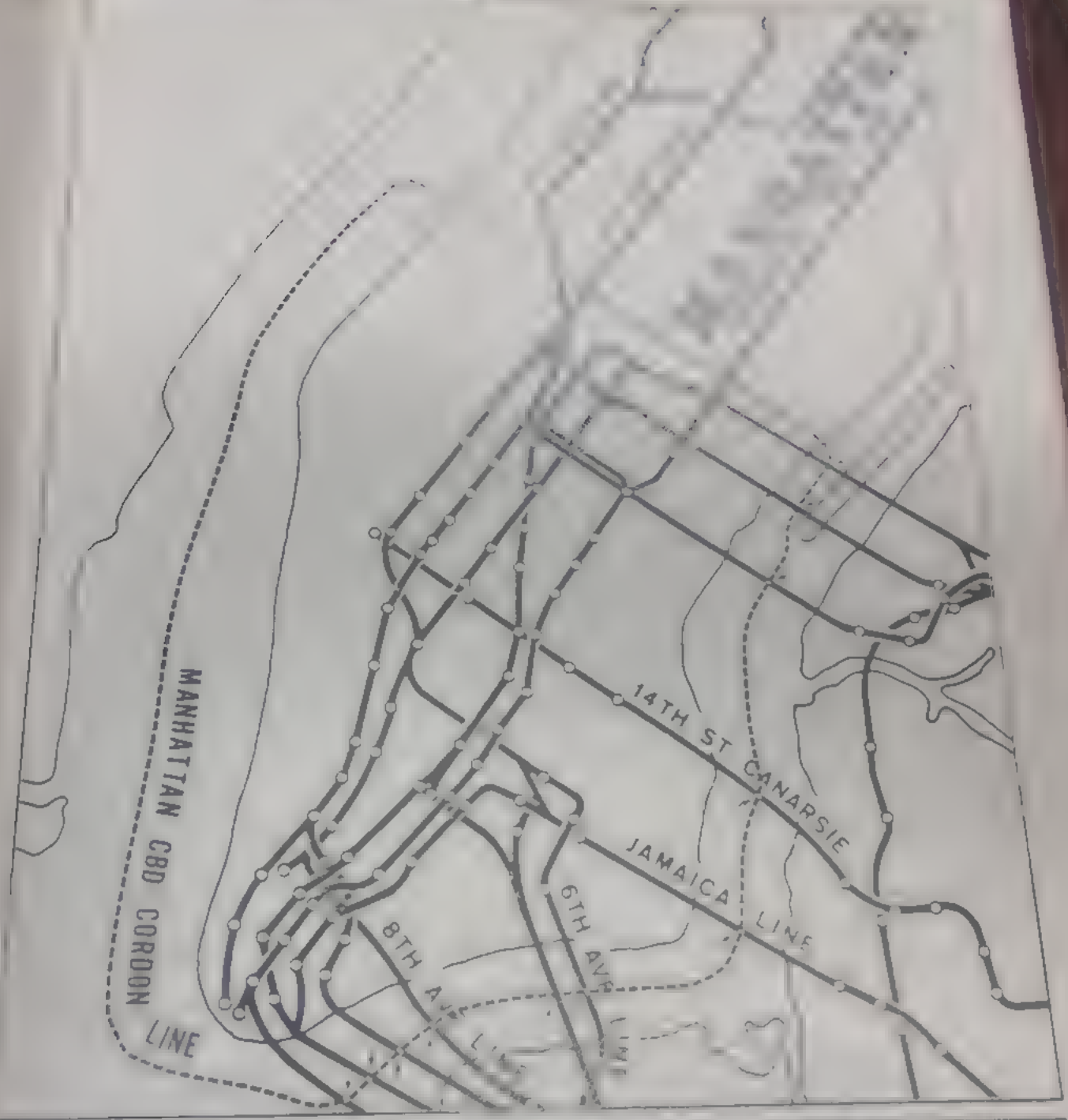
Directional Bias At Stations



New York City
Transit
Authority

Surveyors
were assigned t
more, if warranted
ditional staff we
mobiles entered
. In situation
duced if the
ross the entire

Based on the experi
supervision received
distribution operati
supervision provided
field during the
rovided general
They distributed
problems that arose.
technical expertise
in the field, min
base.



TRANSIT STUDY

Evening Survey Locations
(Manhattan CBD Cordon Line)

N

8

New York City Transit Authority

[illegible]
[illegible] d surv[illegible]
[illegible] idated in
[illegible] trains c[illegible]
Bridge (Figure 1[illegible]

In addition to the [illegible]
was conducted on [illegible]
selected subway st[illegible]
survey used the same [illegible]
established by the s[illegible]
station access and t[illegible]
major evening cultura[illegible]
Times Square, the Ti[illegible]
59th Street/Third Ave[illegible]

Weekend Surveys

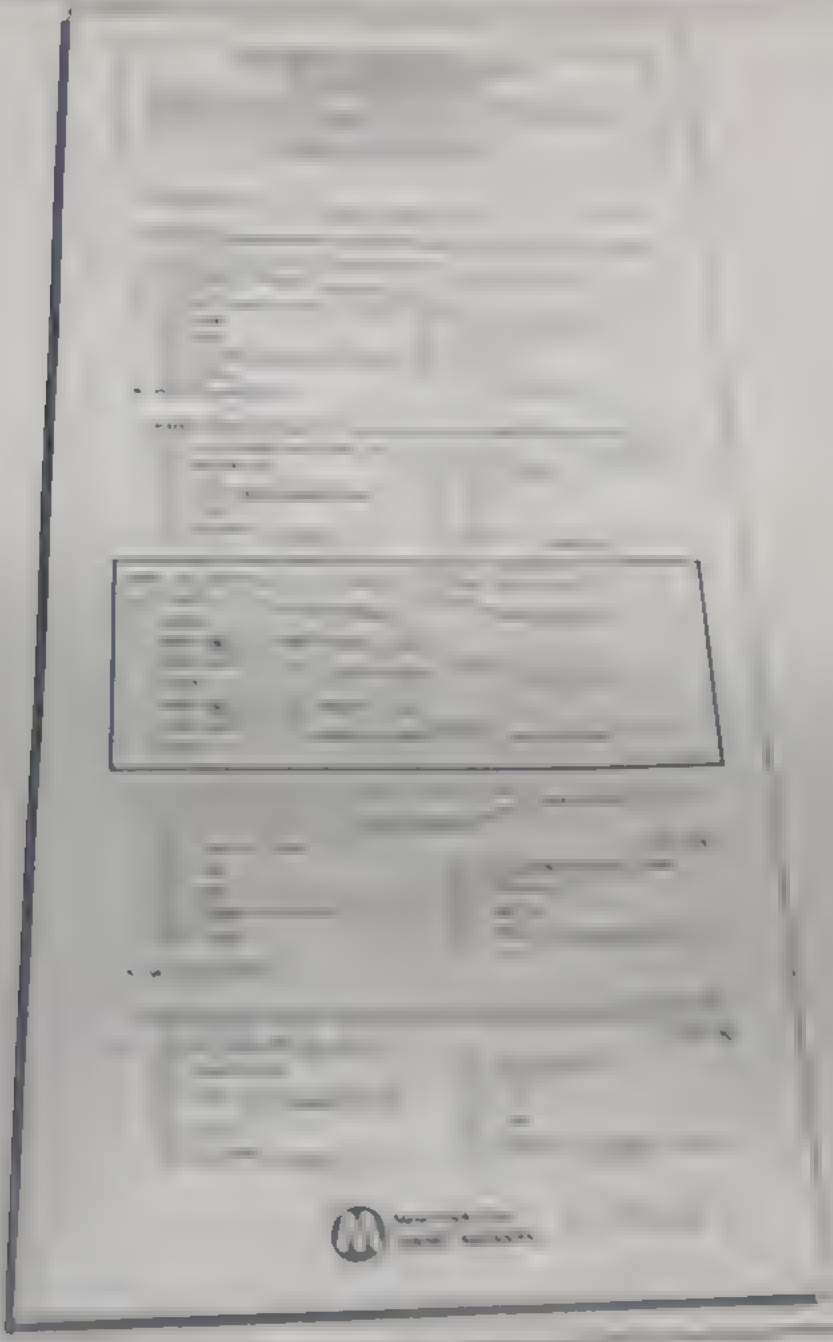
Weekend travel pattern[illegible]
distribution at 59 sel[illegible]
August 18 to October 21, [illegible]
weekend). The distr[illegible] hours were 7AM t[illegible]
Saturdays and 11AM to 6PM on Sundays, reflecting the
periods of heaviest [illegible]. Stations
were selected based [illegible]
demographics, [illegible]
generators and s[illegible] issues. The [illegible]
card and distribution procedure were the same as the
systemwide survey, [illegible] the [illegible] the
registrations, [illegible] were taken [illegible] hour to
give a trip [illegible] project. The survey was
limited in scope, recognizing that route and service
changes would [illegible] weekday travel
patterns collected in the systemwide survey and that the
weekend route structure [illegible] the same as the weekday's
for consistency.

[illegible] special survey, [illegible]
between 6PM and 7PM at [illegible] Figure
[illegible] showing the [illegible]

ta Reduction

[illegible] response rate [illegible]
[illegible] ev varied considerably,
[illegible] percent [illegible]
or the systemwide survey. The response [illegible]
individual surveys on Table [illegible].

[illegible]
[illegible] -fare ticket [illegible]
[illegible] city's fare str[illegible]



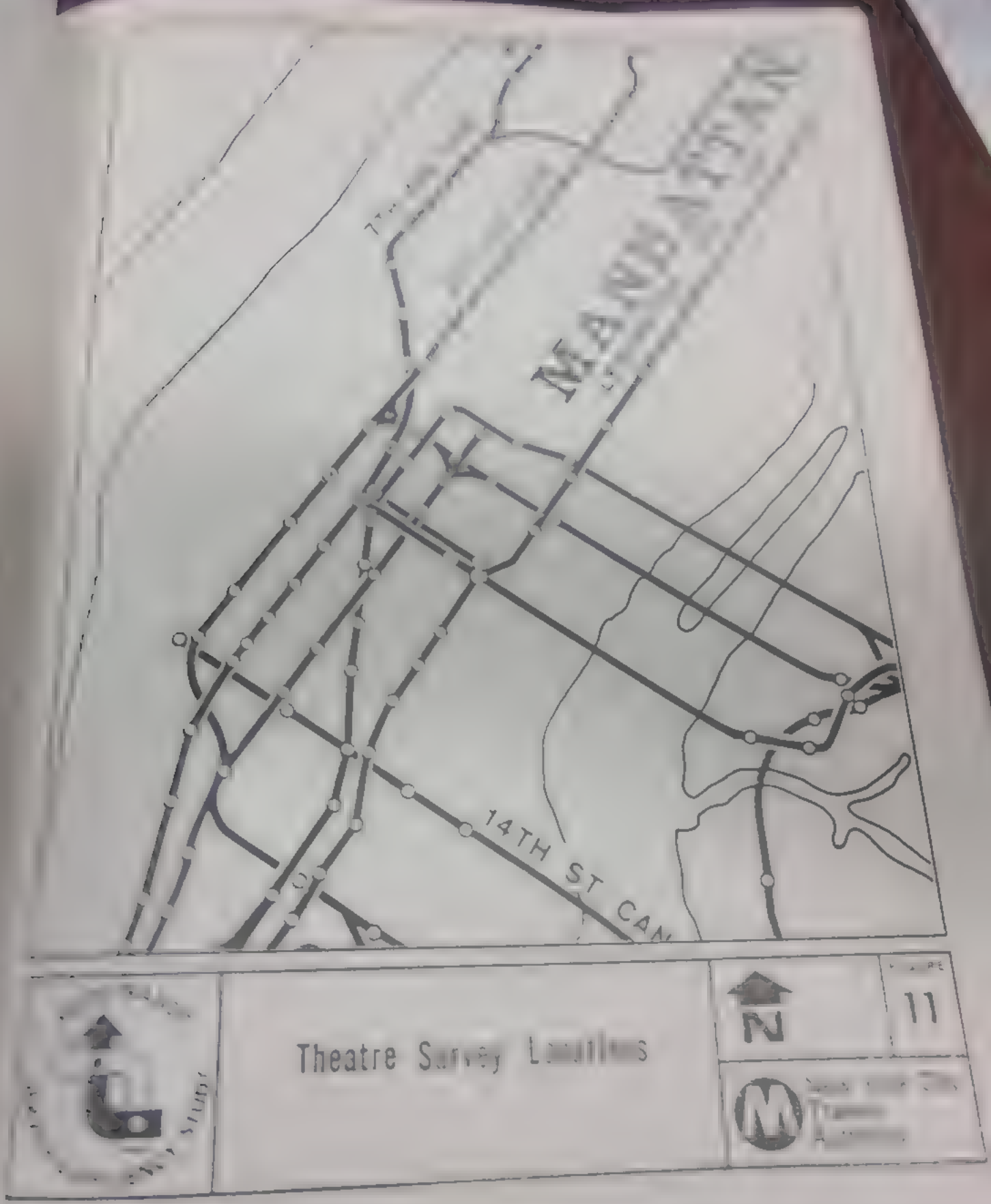
Evening Service Book

RAPID TRANSIT SERVICE EFFICIENCY STUDY

Pilot Evening Survey

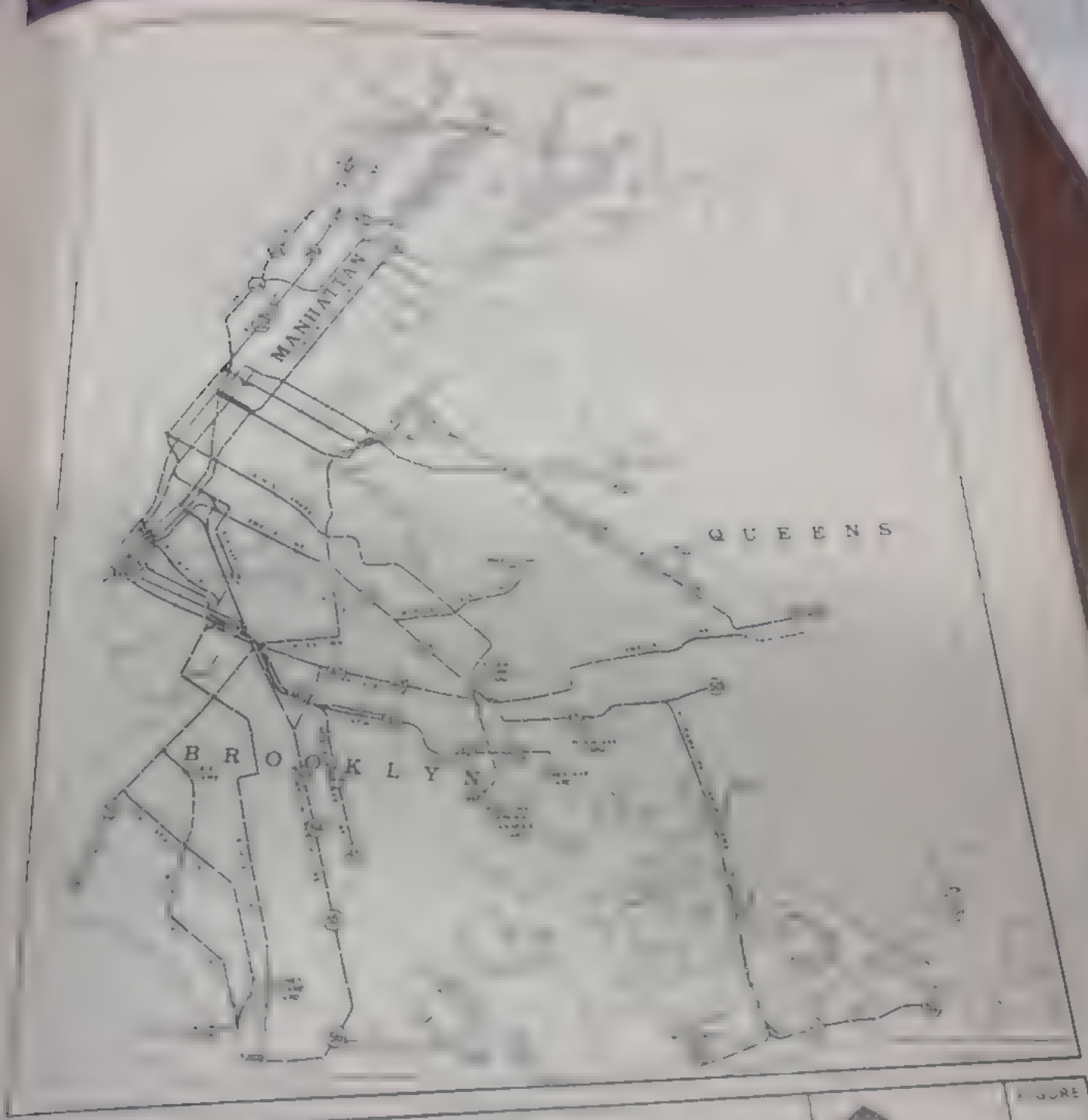
N

10



Theatre Survey Locations

[illegible] Street [illegible]
[illegible] Street [illegible]
[illegible] Street Seventh
Eighth Avenue [illegible]
[illegible] Street/Eighth
[illegible]th Street Fourth



RAPID TRANSIT SERVICE EFFICIENCY STUDY

Weekend Service Locations

FIGURE 12

New York City Transit

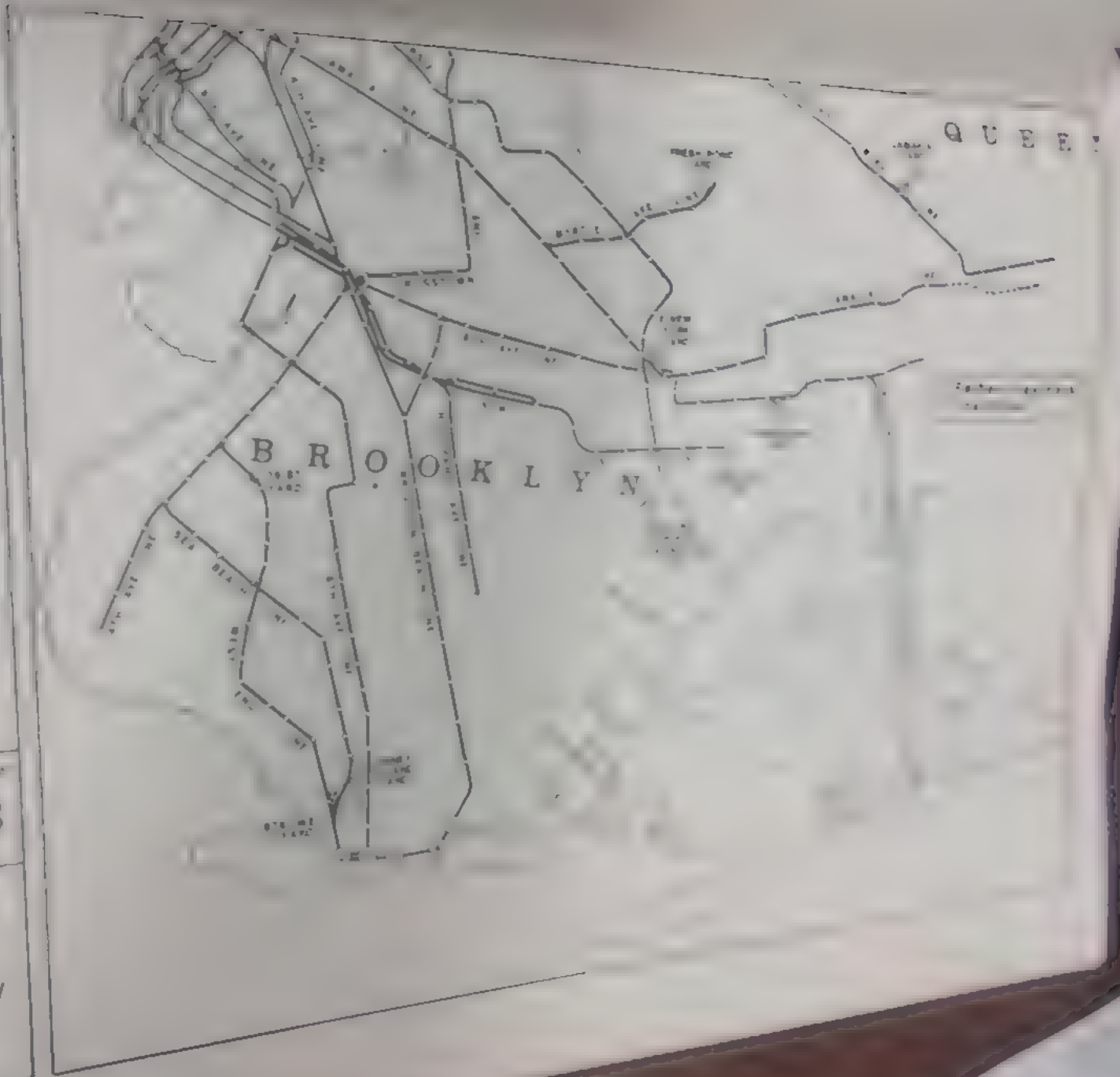
Pelham Parkway (#2
Baychester Road
Gun Hill Road (#5,
East Tremont Avenue

RAPID TRANSIT SERVICE SUFFICIENT STATION

Beach Survey Locations

13

New York City Transit Authority



tem-wide 1,	
Evening Cordon	--
Evening Theatre	39,689
Weekend	[illegible]
Beach	31, [illegible]

Analysis Zones

To organize the data col
surveys into a useful data
[illegible] politan area,
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

A variety of existing zone systems [illegible]
[illegible] for the [illegible]

- The Tri-State Regional Planning Commission network divides New York City into 175 uniform analysis zones. The network was developed in 1963 in [illegible] and essentially parallel the Manhattan street system in Midtown. Because the zones are part of a uniform network intended for regional planning, they were too large to permit the detailed level of analysis required by the [illegible].

- The Bronx Stud [illegible] Tri-State zone [illegible] subdivided to [illegible] characteristic [illegible] population den [illegible]

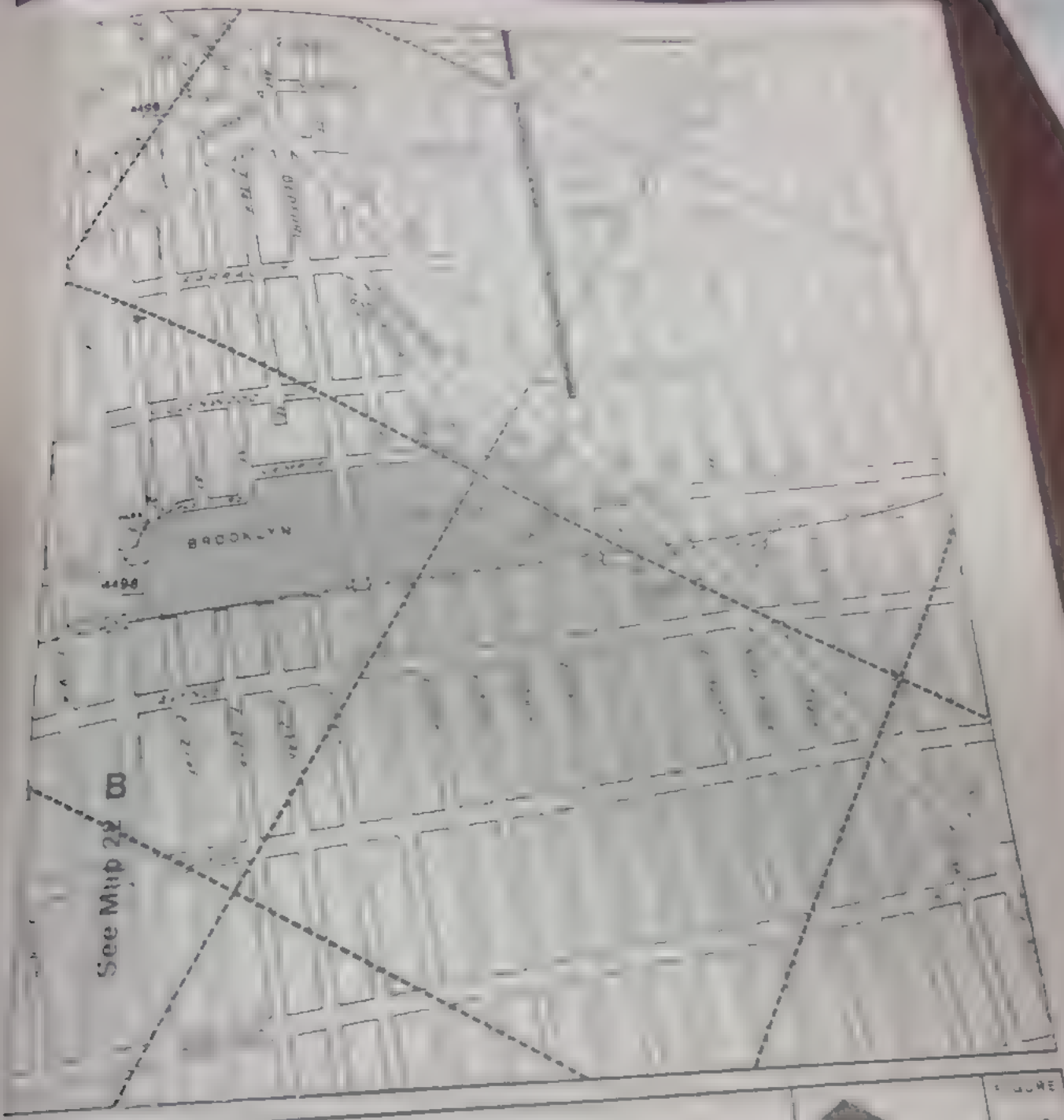
varying

Tri-Sta

probl
zones.
that parall
While this
in most of
neighborhood
boundaries
several UTP
straddle
crossings.

A second pro
land uses
College is
each zone cont
surrounding ne
differs greatl
terms of frequenc
destinations, and
treating the
was able to
generators

Finally,
alignment
distinguishing bet
adjacent transit
choice in Manhatta



RAIL TRANSIT
ALTERNATIVES ANALYSIS/EMERGENCY STUDY

UTPS Z

N

FIGURE
14

The [illegible]
[illegible] nes and
[illegible] for analysi[illegible]
[illegible] in the extrem[illegible]
[illegible]re sensitive to geo[illegible]
[illegible]nd as the basis for
[illegible]ample, four census [illegible]
[illegible]ction of Queens w[illegible]
[illegible] quarter-square mil[illegible]
[illegible]se, were only a few square blocks [illegible]
[illegible]nd uses, population densities and [illegible]

Census tracts were subdivided in areas requiring more detailed analysis or where tracts contained incongruous land uses and population densities. Example [illegible] Coney Island area, JFK Airport, college [illegible] terminals, major medical terminals and important retail area The level of detail of Midtown Manhattan zones we[illegible] configur[illegible] to distinguish between destinations on the Sixth Avenue, Seventh Avenue, Eighth Avenue, and Broadway Lines. Suburban counties, including Staten Island, were allocated to single zones contiguous with county boundaries.

[illegible]
[illegible]nh Service Sufficiency Study Program. Further, [illegible]
[illegible]
[illegible]
[illegible]
[illegible]ll zonal data was coded for both [illegible] procedure also facilitates any [illegible]
future efforts by th[illegible]

[illegible]ding and Editing

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

The coding
office aides ent
keypunching. T

- Train
  ubway
  train.

  co for
  destinati

- and
  ating

By dividing the co
"specialist" the
This helped to tain
coding continue
efficiency and accura

- The ca

[illegible]

To reduce the [illegible]
[illegible] was [illegible]
blocks. After [illegible]
since only [illegible]
adding to the [illegible]
spelling, using app[illegible]
many respondents [illegible]
[illegible] of intersection [illegible]

The same procedu[illegible]
except that trip or[illegible]
This was done was b[illegible]
at a limited numbe[illegible]
survey that was cond[illegible]
not be possible to [illegible]
base with this info[illegible]
size makes the weeke[illegible]
zone level. Further[illegible]
was in part to facil[illegible]
is the majority of the 59 st[illegible]
station entrance open on weekends, [illegible]
[illegible]
information was coded for the nine weekend survey station with[illegible]
[illegible] than [illegible]
access issue was id[illegible]

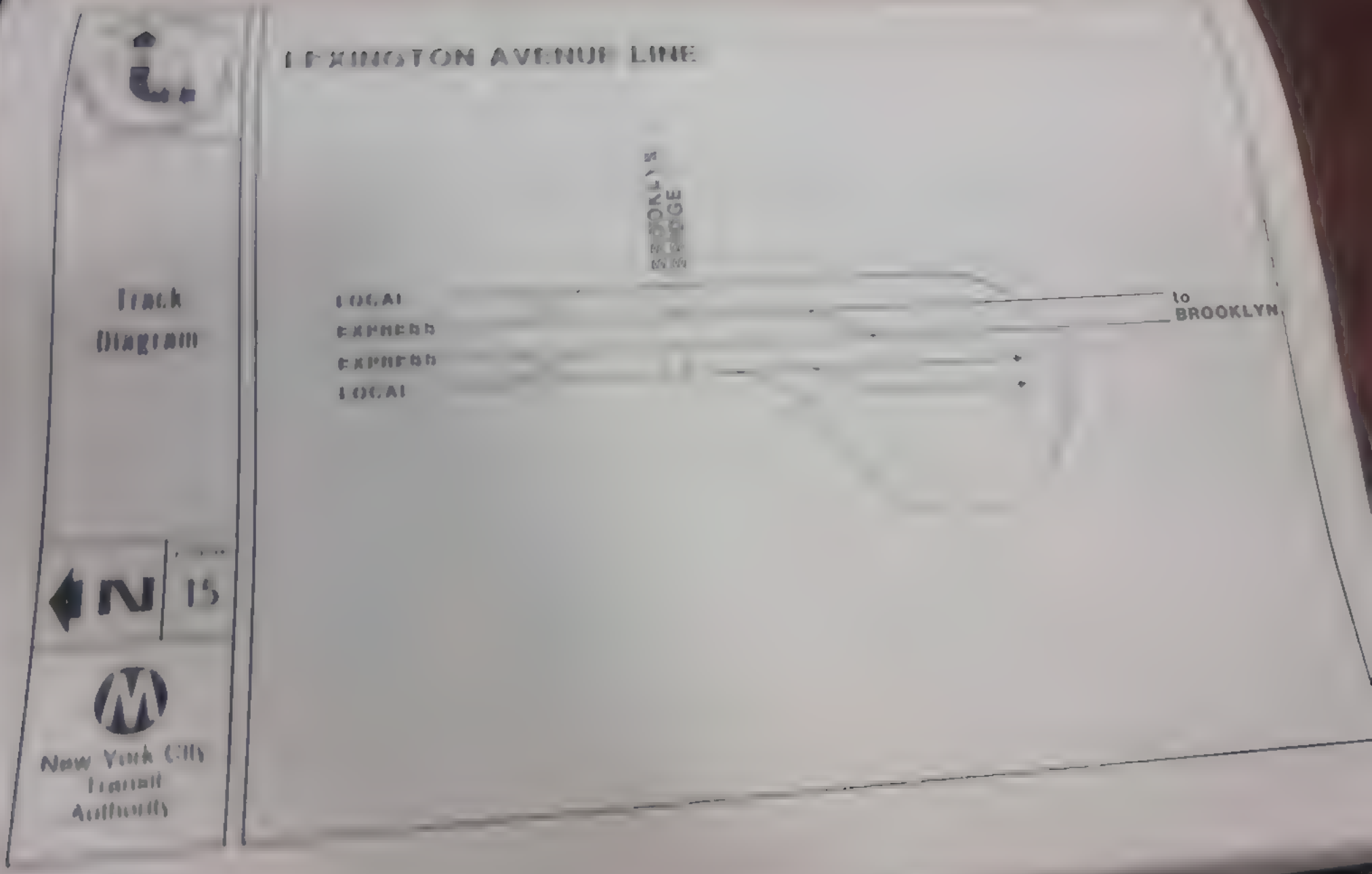
The evening theatre survey was coded for all questions [illegible]
[illegible]
analyzing evening station access [illegible]

The evening cordon survey required an entirely different [illegible]
[illegible]
-by-station breakdown. Instead, [illegible] (described in the next section).
[illegible]
[illegible] cordon line, editing out [illegible] destination stations were [illegible]

enue Corridor
nth Avenue/Broadway Corridor
vn-Queens Crosstown Corridor

three corridors were deleted from the
ilysis---the physical capacity and track
the IRT Lexington Avenue and Seventh Avenue/
s limited possible route and service changes

ronx Study recommendations are contained in


LEXINGTON AVENUE LINE
BROOKLYN BRIDGE
LOCAL
EXPRESS
EXPRESS
LOCAL
to BROOKLYN
Track Diagram
N
15
New York City Transit Authority

ngs,
on was also given to
ger operated to
cessful.

d service alternatives were
nd issues identified for each
as reviewed for advantages and
d alternatives provide the greatest
nefit to the riding public, while
idelines for route and service

[illegible]

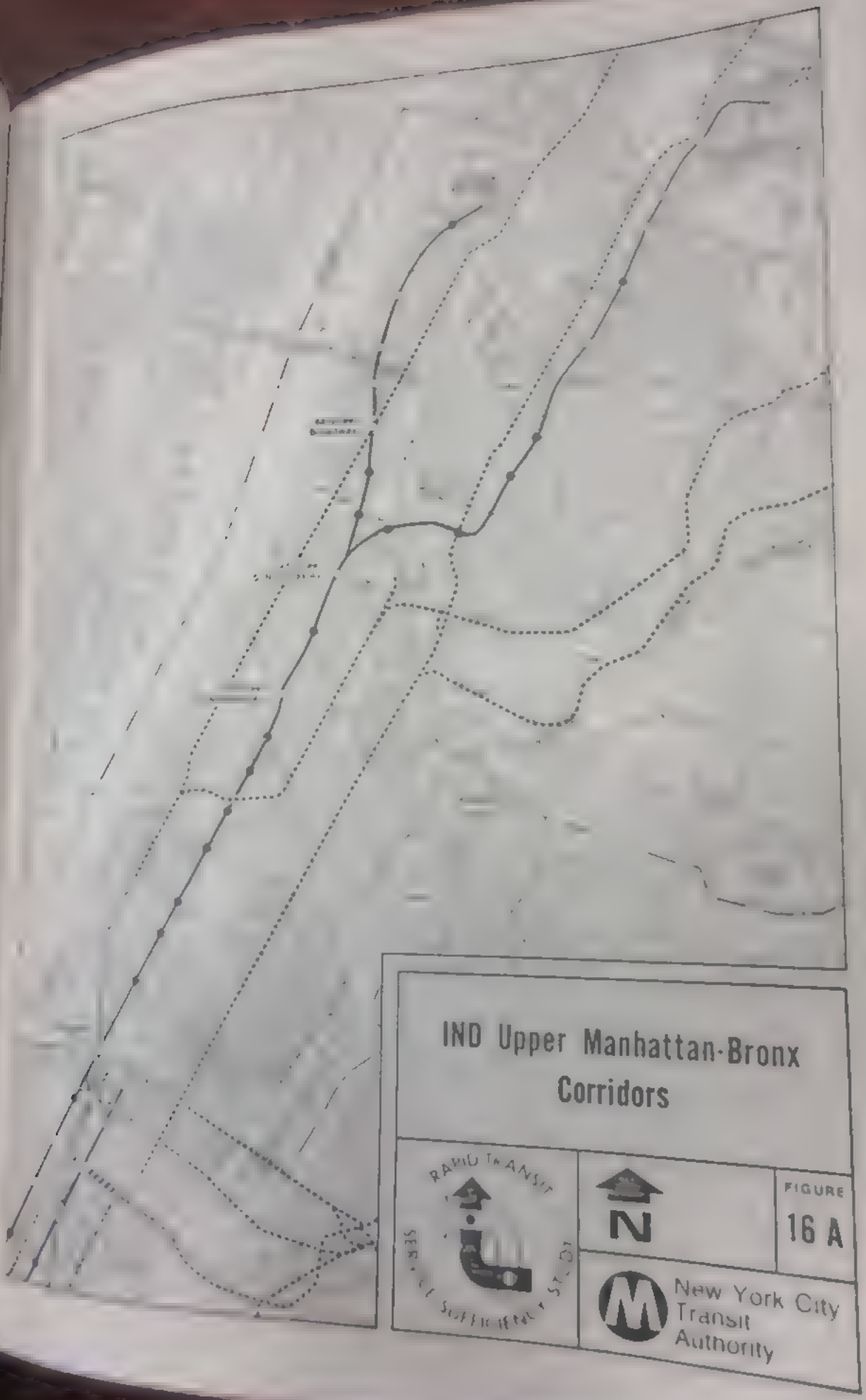
[illegible] West [illegible]

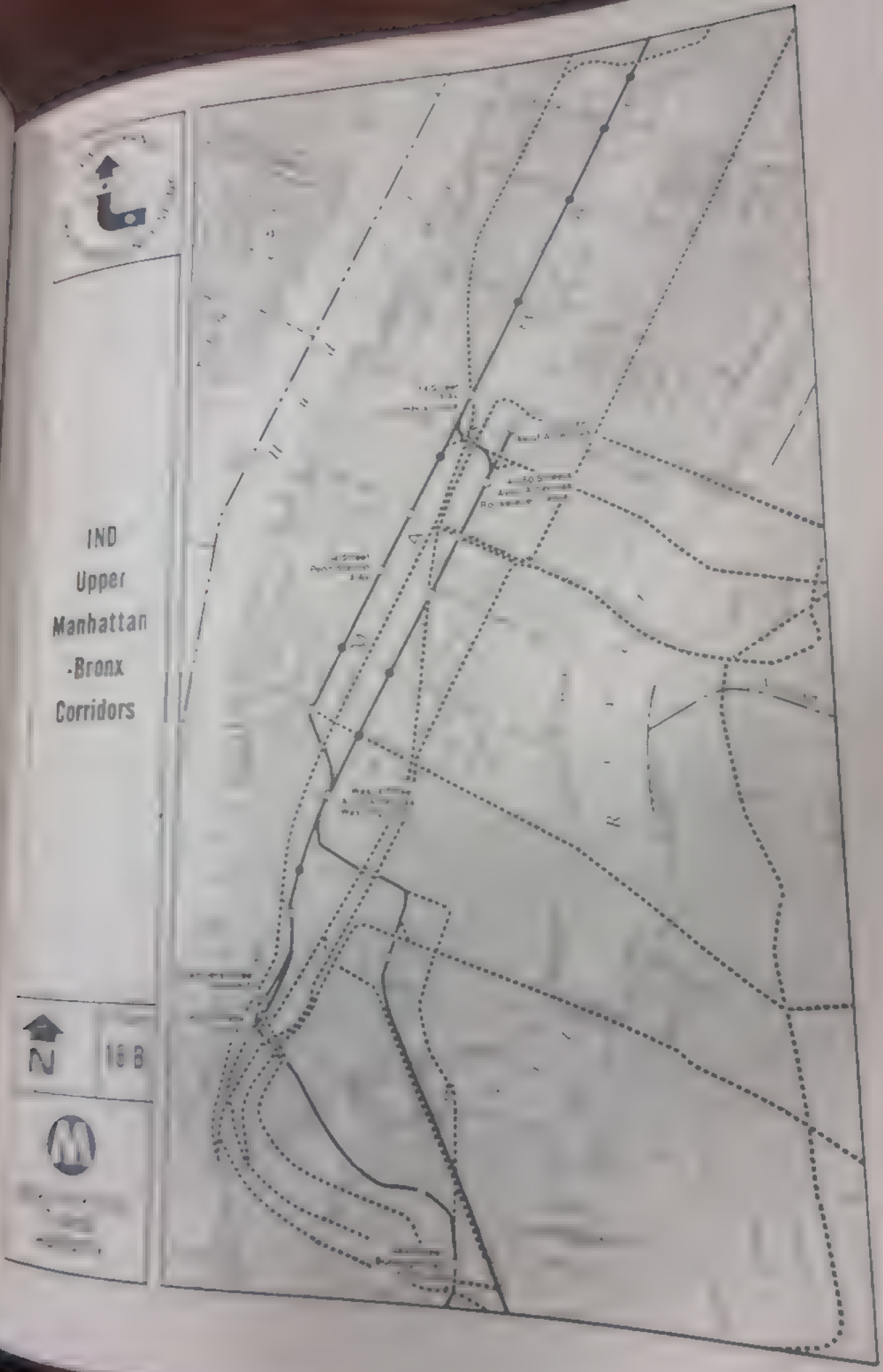
[illegible] West Line [illegible] 59th Street- [illegible] Avenue. From [illegible] subway under [illegible] Avenue to 145th Street. [illegible] with the IND [illegible] Manhattan and Brooklyn. The [illegible] Washington Heights Line [illegible] Concourse Line to the Bronx. [illegible] Central Park West Line is [illegible] can transfer between local and exp[illegible] [illegible] only) and Eighth Avenue [illegible] and [illegible] between the Sixth and Eighth Avenue [illegible] are frequently made at other Central Park West [illegible]

[illegible] corridor is predominantly high-density [illegible] along 125th Street. [illegible] Central Park for 2.5 miles and [illegible] and recreational [illegible] the American [illegible] Planetarium and the New [illegible] within walking [illegible] station.

The Washington Heights Corridor is defined by the alignment [illegible] Washington Heights Line through Upper Manhattan between [illegible] Nicholas Street and 207th Street/Broadway. [illegible] the line runs north as a four-track subway [illegible] Avenue and Broadway to 168th Street; a small [illegible] located at 168th Street, where trains can relay. [illegible] runs north as a two-track subway facility under [illegible] Washington Avenue, Fort Tryon Park and Broadway [illegible] at 207th Street. The major transfer station on [illegible] Heights Line is 168th Street. Here, passengers [illegible] between Eighth Avenue Line services and the local [illegible] Line to the Upper West Side and the Bronx.

[illegible] the corridor is predominantly high-density [illegible] with commercial districts in the vicinity of 168th [illegible] way, 181st Street/Fort Washington Avenue and [illegible] Street. Cultural and recreational activities along the [illegible] the Cloisters, Fort Tryon Park, and Inwood [illegible] George Washington Bridge Bus Station is located [illegible] 207th Street/Fort Washington Avenue Station and [illegible] connections with intercity and commuter buses to New [illegible] Upstate New York.


IND Upper Manhattan-Bronx
Corridors
RAPID TRANSIT
N
FIGURE
16 A
New York City
Transit
Authority


IND
Upper
Manhattan
-Bronx
Corridors
N
16 B

[illegible] y th[illegible] gnment [illegible]
[illegible] d th[illegible] onx nor[illegible]n
[illegible] rmin[illegible] t 205th
[illegible] e runs
[illegible] the [illegible] Avenue,
14[illegible] /Eig[illegible] er to
[illegible] rlem [illegible] 161st
[illegible] bene[illegible] levard.
[illegible] ne cont[illegible] Park[illegible] rse Yar
[illegible] r as Bed [illegible] o Co[illegible] racks
[illegible] ard lead. [illegible] le t[illegible] ing at
[illegible] to relay, wh[illegible] er stat on
[illegible] Parkway and term[illegible] course.
[illegible] ue. The major tr[illegible] Line
[illegible] 51st Street/Grand[illegible] de, or to
[illegible] n the Grand Corc[illegible]
[illegible] e Line to the Eas[illegible]
[illegible] ronx.

[illegible] nsity
[illegible] predominantly li[illegible] Harlem
[illegible] y industry along [illegible] eet/Gr nd
[illegible] located at 170th [illegible] Avenue
[illegible] th Street/Bainbr[illegible] house re
[illegible] ne Bronx Count[illegible]
[illegible]

[illegible] e IND Upper Manh[illegible]n/Bronx
[illegible] and "D". Curre[illegible] peration o[illegible]

[illegible] operates betwe[illegible] 7th
[illegible] tan, and either [illegible] erts
[illegible] y, Queens, at a[illegible] imes except
[illegible] "A" operates loc[illegible] ervice
[illegible] f Lefferts Boule[illegible]; the "A"
[illegible] Rockaway servi[illegible] t night.

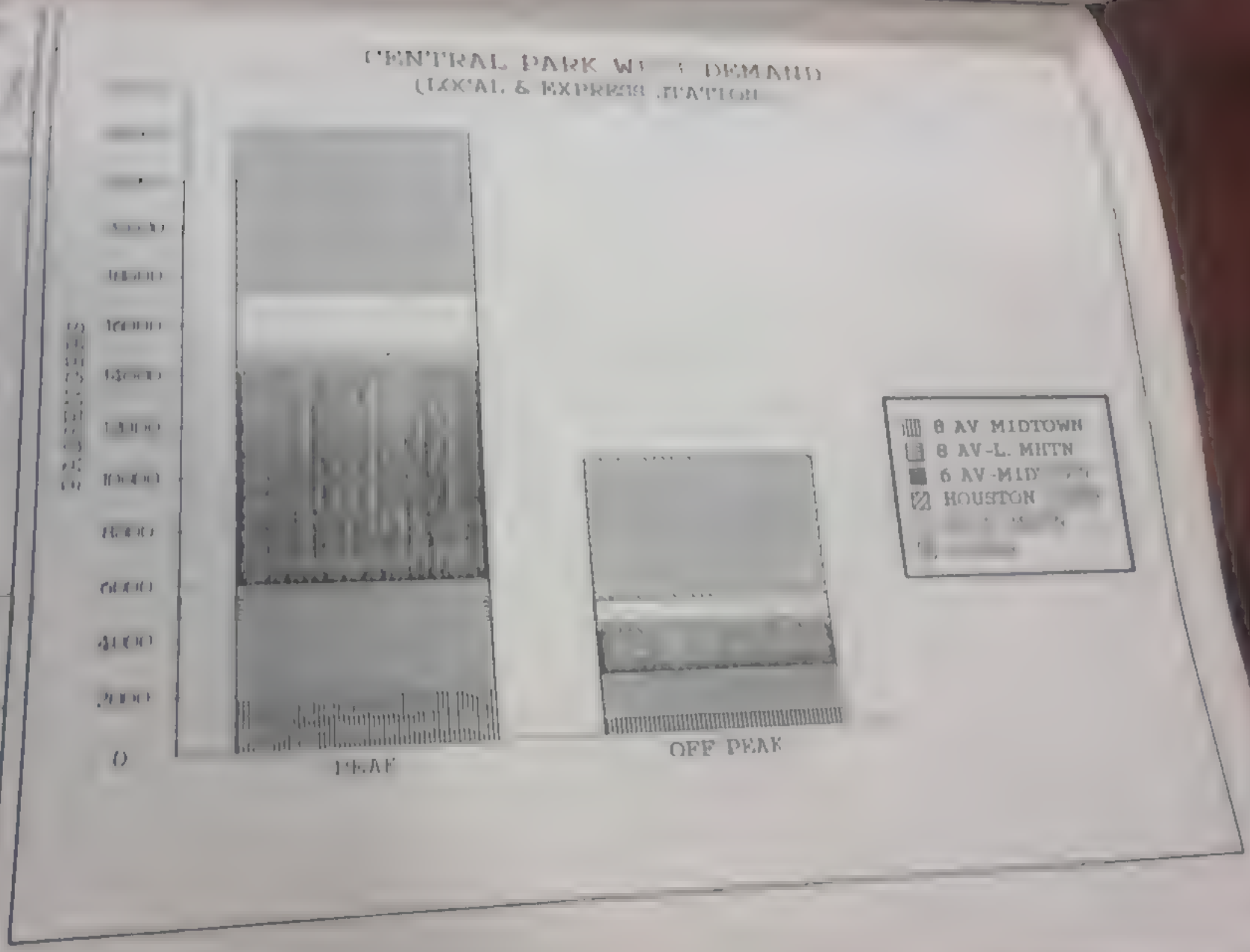
[illegible] perates between [illegible] h
[illegible] mbers Street-Wor[illegible] rade
[illegible] ll times except [illegible] perio s

[illegible] erates between S[illegible]
[illegible] nhattan, and C[illegible] sland,
[illegible] except nights [illegible] outhbound
[illegible] n Sixth Avenue, Manhattan,
[illegible] The "B" (Sixth Avenue
[illegible] between 68th Street/Broadway,
[illegible] sland, Brooklyn, during peak
[illegible] aims both locals and express-s
[illegible] Brooklyn. At nig t
[illegible] en 57th Street Sixth
[illegible] nue, Manhattan, and
[illegible] e and Coney Is and.

					TOTAL ALL STOPS	
					10.7%	2,631
					7.4%	1,805
					16.7%	4,097
					33.6%	8,244
					3.0%	734
					8.6%	7,014
		13,088				24,525

OFF-PEAK (11AM to 2PM)

STATIONS	LOCAL STOPS		EXPRESS STOPS		TOTAL ALL STOPS	
T-MHTN	8.2%	226	8.8%	690	8.7%	916
[illegible]	8.4%	232	4.7%	367	5.7%	599
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14.6%	1,544
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15.6%	1,643
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1,511	54.[illegible]%	4,672	53.[illegible]%	5,603
		[illegible]		[illegible]		10,562



Passenger Demand

FIGURE 17

New York City Transit Authority

[illegible]

[illegible] the IND [illegible] riders [illegible] venue [illegible]: only the "A" [illegible] Heights Line [illegible] on the Grand [illegible]

[illegible] off-peak service, [illegible]

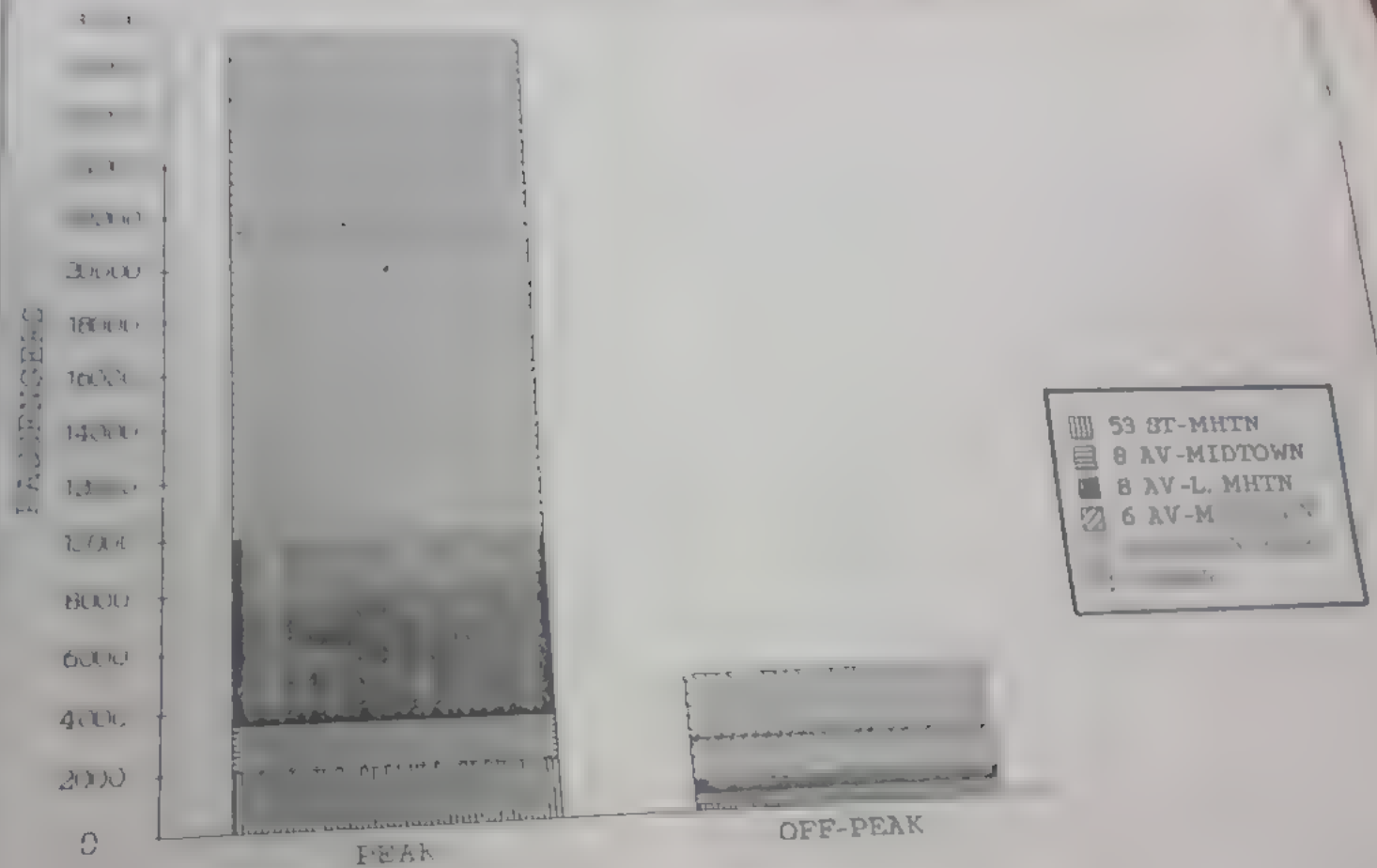
[illegible] ak local service in Upper Manhattan [illegible] y serve identified demand. All [illegible] service through Washington Heights and [illegible] is currently oriented towards [illegible] tinations. However, 1,000 riders [illegible] ions between 11AM [illegible] destinations.

Passenger Demand

FIGURE 18

New York City Transit Authority

WASHINGTON HEIGHTS DEMAND



[illegible]

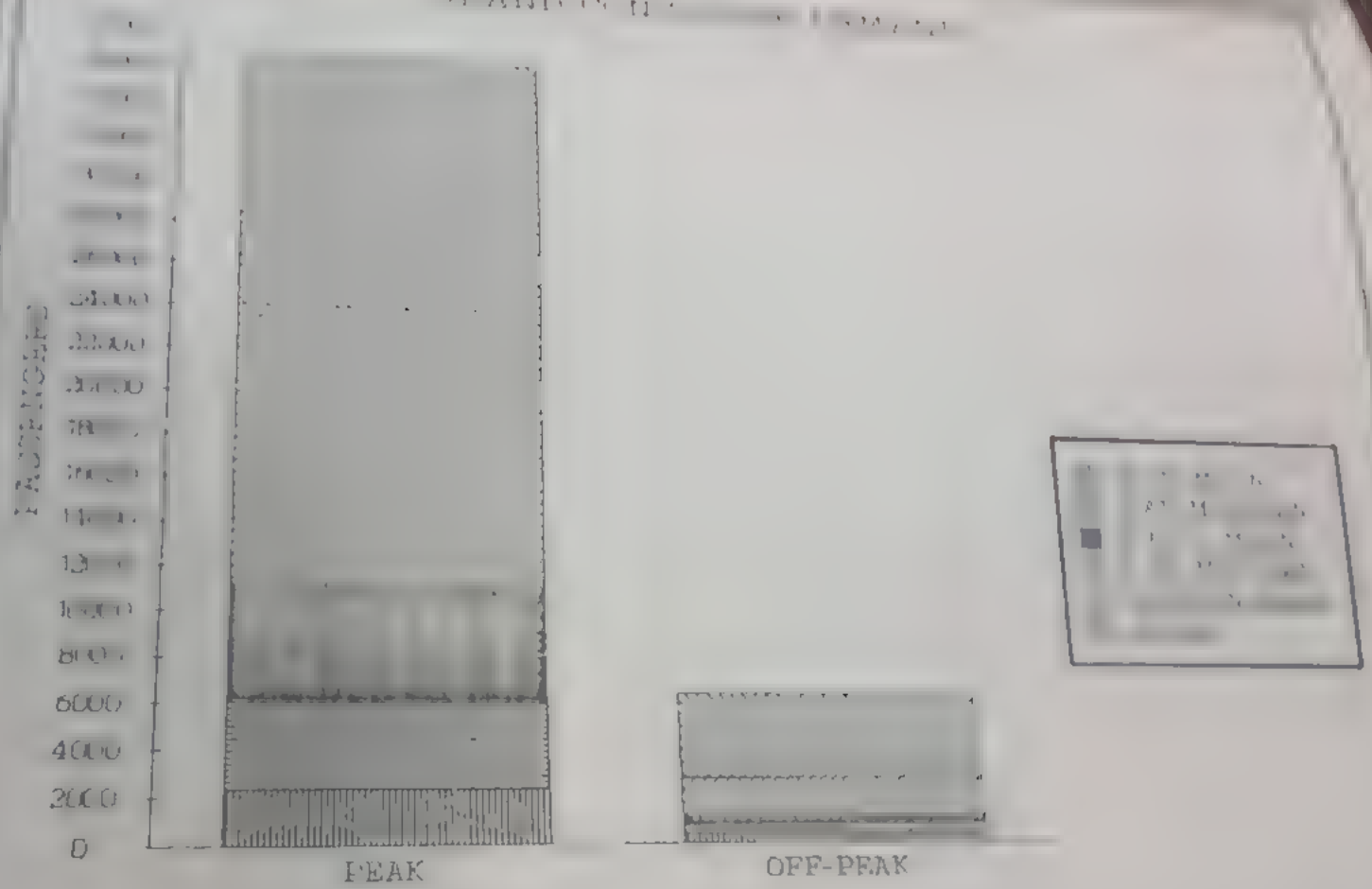
[illegible] Manhattan and [illegible] identified [illegible]

[illegible] structure is confusing.

[illegible] ies, the following [illegible] d reviewed:

Replace the "AA" with "B" service to 168th Street/Broadway at all times (except nights).

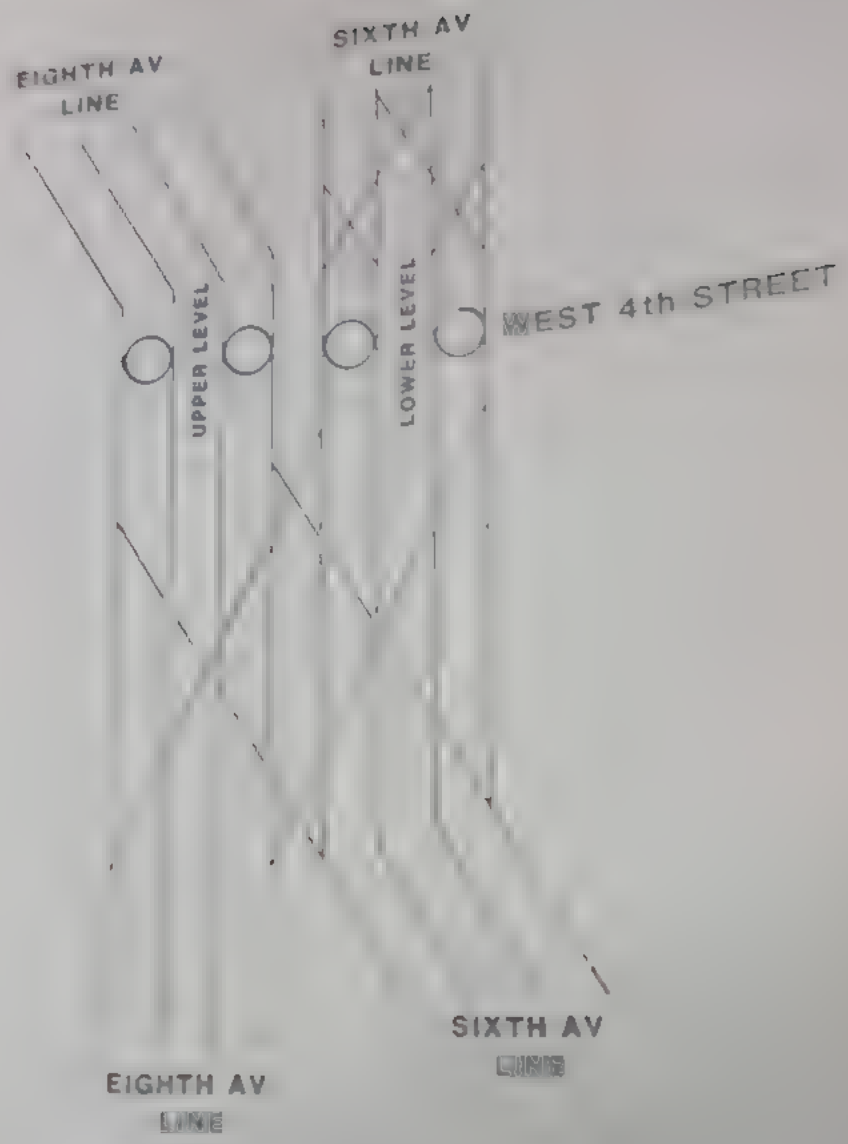
[illegible] es a service pattern through Upper Manhattan [illegible] efforts identified [illegible] and Central Park [illegible] Street and the [illegible] Avenue destinations. [illegible] from these local stations between [illegible] and [illegible] currently must transfer [illegible] direct service.



Passenger Demand

FIGURE 19

New York City Transit Authority



WEST 4th STREET INTERLOCKING

Track
Diagram

N

FIGURE
20

New York City
Transit
Authority

its and [illegible] tr[illegible]
t to 72nd Street) and
iders from these local
currently provided wil
[illegible] have to transfer.

[illegible] peak service between Washingt[illegible]
[illegible] entral Park West express station[illegible] would be [illegible]
enue stations. Direct [illegible] fro[illegible]
ly halved for [illegible]
[illegible] ighth [illegible]

[illegible] ff-peak
hambers

[illegible] rn through Upper Manhattan
[illegible] demand. Off-peak local
[illegible] ton Heights and Central Park
[illegible] Sixth Avenue destinations. 1,
[illegible] local [illegible] direct
[illegible] stations through
two-to-one towards Sixth Avenue [illegible]
vely doubling the [illegible]
s from these stati[illegible]
tinations between 11AM and 2PM.

[illegible] eves offpeak overcrowding on the "AA" at
street Station that o[illegible] when schools [illegible]
[illegible] by Manhattan Community Board #2. [illegible]
full-length trains compared to the four-car

[illegible] between

[illegible] off-peak [illegible]
[illegible] and numbers [illegible]
[illegible] two minutes to the [illegible]

Replace the [illegible] at all t[illegible]
street Broadway at all times [illegible]
nights. Terminate the [illegible]
street Broadway at all times
nights. Extend "[illegible]" to 207th
street Broadway at night.

[illegible] pattern [illegible] Upper Manhattan
[illegible] identified demand. Peak period
[illegible] service between 207th Street and
[illegible] directed towards Sixth Avenue.
[illegible] stations between 6AM and 10AM
[illegible] would have direct
[illegible] service through Washington
[illegible] between 207th Street and
[illegible] towards Sixth Avenue
[illegible] riders from these local stations
[illegible] that currently must transfer
[illegible] service. Off-peak service to
[illegible] Heights and
[illegible] Street to 59th Street would
[illegible]ected two-to-one towards Sixth Avenue
[illegible]ions, effectively doubling the direct service
[illegible] riders from these stations with Sixth Avenue
[illegible]ions between 11AM and 2PM.

[illegible]minates direct peak service between Washington
[illegible] stations (207th Street to 125th Street) and
[illegible] stations. [illegible] riders from these
[illegible] between 7AM and 10AM that currently have
[illegible] must transfer.

rrently p
e stations,
off-peak
tively
tan express
Avenue destinati

off-peak ser
Washington Heights
Spring Street
would be elimina
tional transfer for 4,
day riders and 2,300 Sunday

Eighth Avenue local service to 50th
center
Street, Spring Street
halved.

time between Washington Heights Line stations
th Street and Midtown Manhattan would
by about nine minutes.

times (except
" local off-peak
and Chambers
Extend "A" to
t night.

e pattern through Upper Manhattan
s identified demand. Peak period
Heights service between 207th Street and
Street would be oriented towards Sixth Avenue.
riders from these stations between 6AM and 10AM
currently must transfer would have direct
off-peak
Washington
Chambers
street and
towards Sixth Avenue
these local stations
transfer
ress stations through Washington Heights and
towards
riders from these stations
between 11AM and 2PM.

ghts Line
Manhattan would

ervice between 50th
eliminated, adding
nning time

local and the "8"
et/Broadway. ("A"
reet/Broadway, nights).

pattern to Washington Heights and
express stations that reflects
tified demand. Peak express service through
ngton Heights (207th Street to 175th Street)
be oriented towards Sixth Avenue destinations.

currently must transfer would have direct
ce. Peak local service through Washington

ington Heights and
that reflects
on Heights
would be
Avenue destinations. 11,500
ons between 6AM and 10AM that
have direct service.
205th Street
owards Eton
grand
10AM would

through Upper Manhattan
demand. Off-peak local
Heights and Central Park
eet and 72nd Street would be
wn Sixth Avenue and Downtown
inations. 1,000 riders from these
ben 11AM and 2PM that currently
have direct service. Off-peak
press stations through Washington Heights
west would be oriented two-to-one
Sixth Avenue and Downtown Eighth
effectively doubling the direct
rs from these stations between
h Avenue destinations.

ignificantly
ak periods

dentified demand. Peak Grand Concourse "D would be totally oriented towards Sixth Avenue ations. 6,600 riders from Grand Concourse local - between 6AM and 10AM that currently must would have direct service to Sixth Avenue.

during peak periods.

tes express service along the Grand
ng travel time
6AM and

ternatives were reviewed to determine which

staying within the Study guidelines for
anges. The disadvantages associated with
4, 5, 6, 7, 8, & 9 significantly outweigh
by the proposed changes in routes and
nspection, Alternative #2 provided the best

would be as follows:

Avenue Local/Express during peak periods)
unchanged except that it operates local
between 59th Street-Columbus Circle and
Street, World Trade Center, Manhattan.

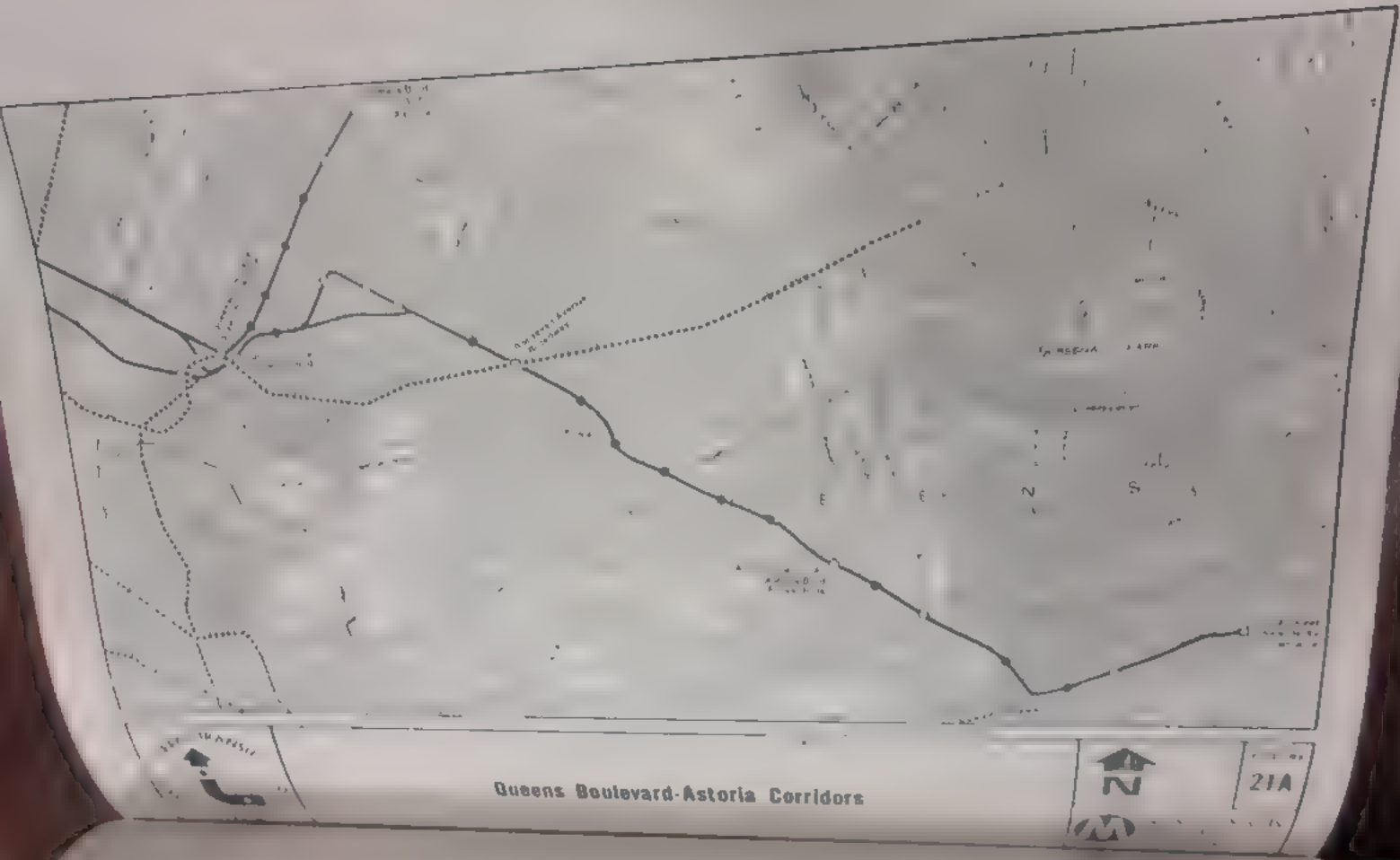
[illegible] tained by
[illegible] as proposed in the
section.
would be local on Sixth Avenue, as
ueens Boulevard-Astoria Corridor sect[illegible]n.

side
reached
at

r all of the Queens
and "N". Current
s as follows:

Avenue al) operates between 179th Street/
de Avenue, ueens, and the World Trade Center,
. at all times. In Queens, the "E" operate
Plaza at all

Avenue Local) operates between 179th Street/
side Avenue, Queens, and Coney Island or Kin
, Brooklyn, at all times. In Queens, the
es express between 179th Street/Hillside Avenue
Hills during peak periods and between


Queens Boulevard-Astoria Corridors
21A

Queens
Boulevard
-Astoria
Corridor
N
218

[illegible]

[illegible] nment of the
[illegible] tmars Boulevard.
[illegible] ns north as a
[illegible] treet, terminating at
[illegible]

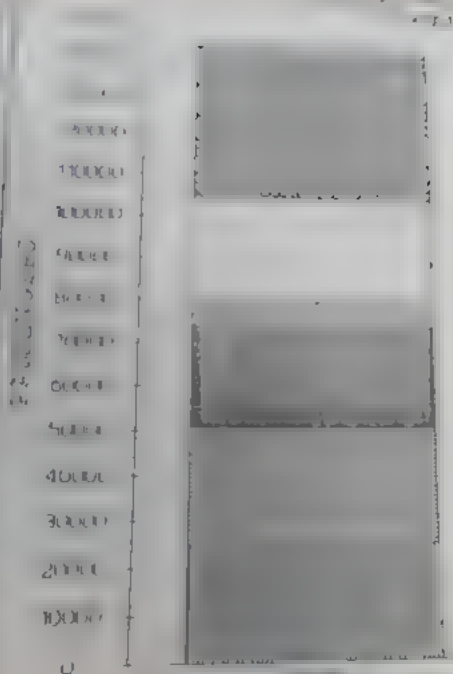
[illegible] is predominantly medium-density
[illegible] local commercial [illegible]
[illegible]
[illegible] ria-Steinway.

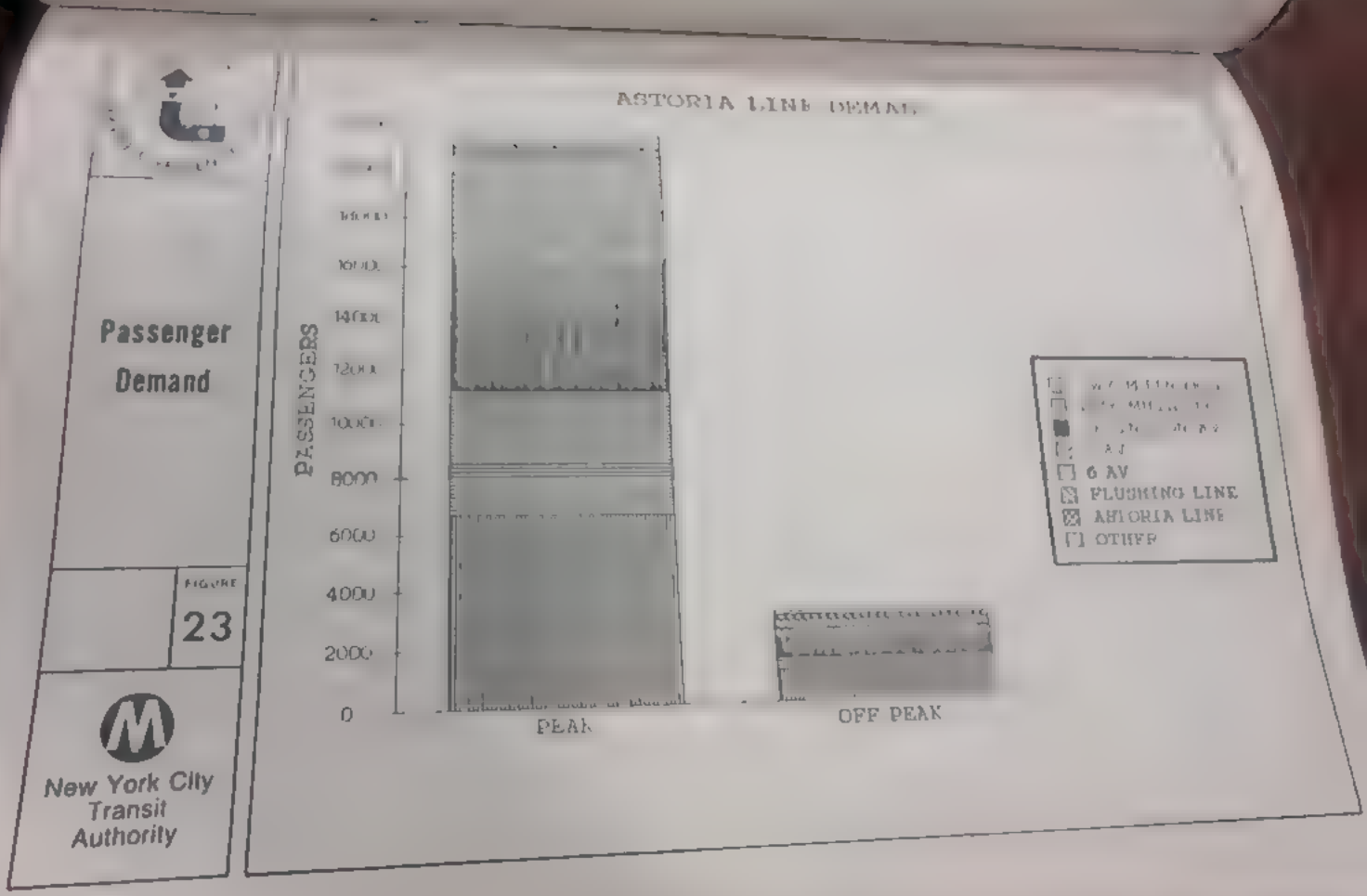
the "RR" provides Astoria Lin[illegible] service. The
[illegible] local) operates betwe n Astoria, Queens, and
[illegible] rth Avenue, Brooklyn, at all times. Astoria

Passenger Demand

FIGURE 22

New York City Transit Authority




ASTORIA LINE DEMAND
Passenger Demand
FIGURE
23
New York City Transit Authority
PASSENGERS
16000
14000
12000
10000
8000
6000
4000
2000
0
PEAK
OFF PEAK
6 AV
FLUSHING LINE
ASTORIA LINE
OTHER

lazal to
is
oulevard
though direct
stations is
operate every
ak period, while
es continuously

eriod demand om the Queens Boulevard Line
sdway Line local stops north of Canal Street
49th Stree(s
Avenue) is on either

nes to 49th
demand from
: this is
riders can use
Avenue

emand from:

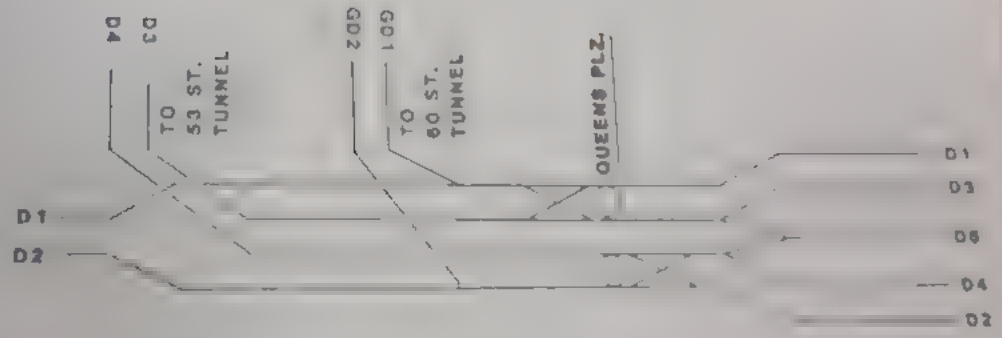
ASTORIA	FLUSHING	ASTORIA/ [illegible] TOTAL	QUEENS BLVD LINE

QUEENS BLVD. LINE

Track Diagram

N 24

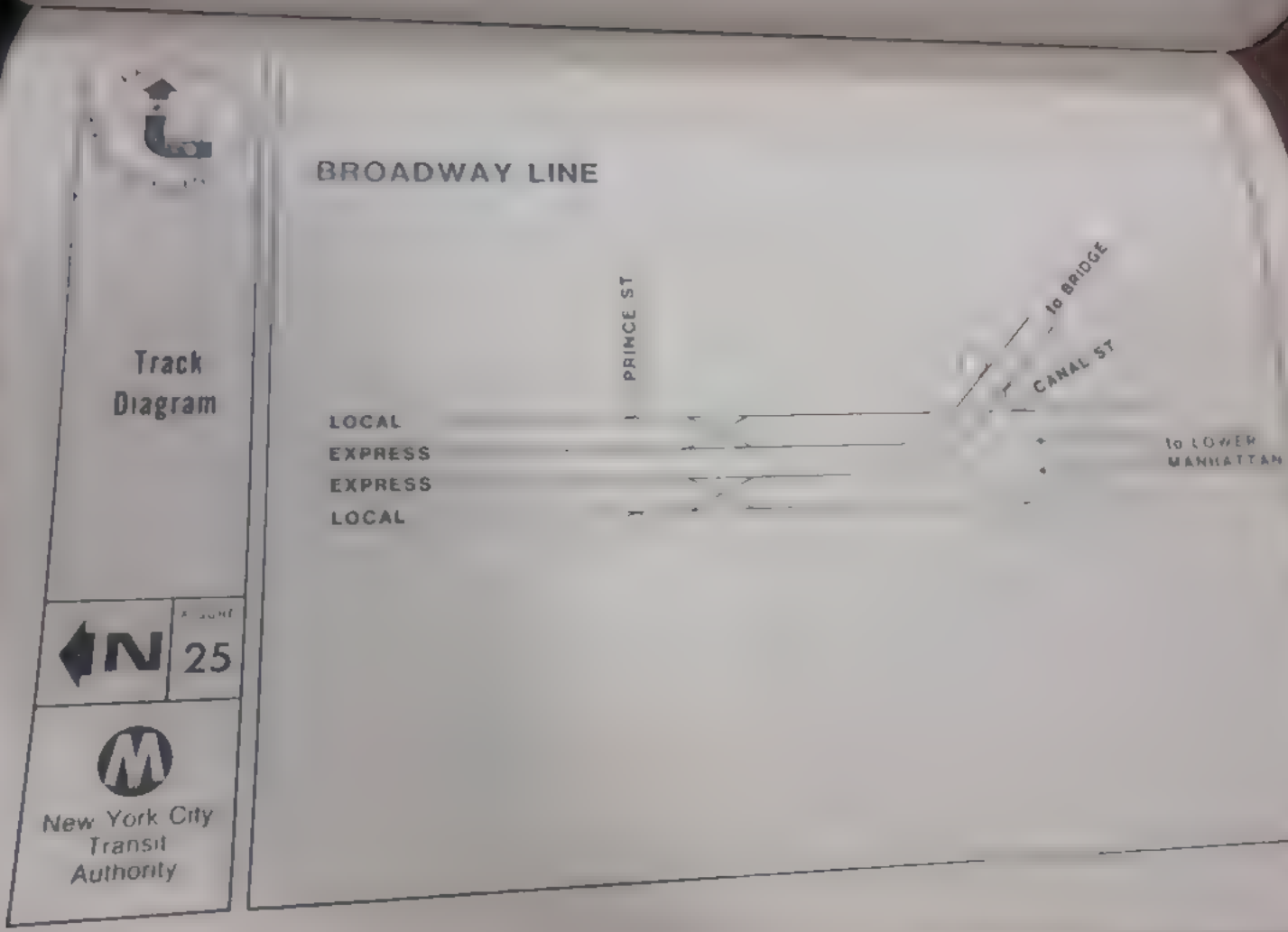
New York City Transit Authority



emand issues for the Queens Boulevard and
ere reviewed and analyzed to identify route
to address these problems.

structure is confusing, with a
ations providing service to or
nd Astoria Lines.

ate "N" service varia
stently as a Br


BROADWAY LINE
PRINCE ST
to BRIDGE
CANAL ST
LOCAL
EXPRESS
EXPRESS
LOCAL
to LOWER MANHATTAN
Track Diagram
N
25
New York City Transit Authority

eliminate
Fores
conform wit Study guide

e a "N" and "RR"
ttan that is consi
AM peak riders on the que destin with t
Astoria Lines with
have direct se
, 62,000 of the
on any train.

es operating costs through the
evenue car-miles by providing
ent storage yard along its route

es:

riders between Astoria Line and Local
line stations to tra fer. Currentl
riders r the Astoria Line with Broadway Line
tions have direct service. With this propos
these riders would have to transfer.

Option

witch the "N" and "RR" service patterns in
hattan. erating the "N" as a Broadway
nate "N" service variations to
nes.

Advantages

Provides a "N" and "RR" service pattern in Queens and Manhattan that is consistent with identified demand.
AM peak riders on the Queens Boulevard Local
and Astoria Lines with Broadway Line destinations
rently have direct service on any train. With this
, 62,000 of these riders would have direct

ntages:

ires Fourth Avenue (Brooklyn) Line riders that are
ed with direct service to Lower
the local Broadway Line to transfer.
AM to 2PM, shows that Fourth Avenue Line
greater preference for Downtown Brooklyn
Manhattan (10,300 riders than do Sea Beach
riders) and would be disadvantaged
ternative.

[illegible]

[illegible] than that [illegible]

[illegible] stations have [illegible]

[illegible] t service on any t[illegible]

[illegible]

[illegible] problems [illegible]

[illegible] Tune [illegible]

[illegible]

[illegible] destinations,

[illegible] have to transfer. These

[illegible] trains [illegible] does not [illegible]

[illegible]

[illegible] direct service

[illegible] riders [illegible] AM peak riders of the [illegible] destination, south of [illegible] these passengers [illegible] service. These passengers [illegible]

[illegible] trains would have to [illegible] not conform [illegible]

[illegible] route and service [illegible] ptive of current [illegible]

[illegible] t relieve the above demand issue.

[illegible] the Astoria and Flushing Lines [illegible] nth Avenue is greater than the [illegible] Boulevard Line.

[illegible] trains at 49th Street/ [illegible]

[illegible] service for 1,200 AM peak riders from [illegible] that would have to transfer if the [illegible] omes the Broadway express service.

e that wou
oute to rea
becomes

a minute to
adway express s

change.

with Study guide
being least d

the above demand issue.

ocal service during
does not reflect
connections with

no Crosstown Line
tal Avenues) via the
ings (until 11PM,

rect service between the Broadway Line and
ueens Boulevard Line evenings, Saturdays and
s. Currently, 97 percent of riders traveling to
m Queens Boulevard Line local stations
during evenings, 60,000 on Sa
days) must transfer to reach their destinations,
of these riders on weeknights, 34,000 riders on
days and 29,000 riders
must transfer
riders and 24,000 Sunday riders,
to transfer once and virtually no riders would
to transfer twice.

e Lexington
at 60th St

evening (8PM
passengers
boulevard Lin
ed, the average car
ce will be 35 passenger

ges:

des a greater level of service to
vard stations during the late evening period than
ranted by RTTD traffic checks, reducing the
effectiveness of service in the

erate the Broadway, the service to Forest Hills
to Continental Ave. and the
oulevard Line, evenings (until 11PM), Saturdays
d Sundays. Operate the Crosstown Line service
Forest Hills during periods of high ridership
at Queens Plaza at other times.

ce between the Broadway Line and
ers Boulevard Line at evenings, Saturday and
Minimizes the need for passengers to
Currently,
m Queens Bou
,000 riders during weeknights
Saturdays and 35,
their destinations,
t transfer to
weeknights, 34,000 ri
Sunday riders
Sunday riders would have to transfer once
ally no riders would have to transfer twice.

transfers between the Lexington Avenue Line
boulevard line at 59th Street Lexington
Saturdays and Sundays. Currently,
riders, 2,
riders on Saturdays,
on Sundays traveling to or from
local stations must make two transfer
and/or use a circuitous route to reach Lexington
stations.

the local stations---
to 6AM)---must transfer
1,000 of these riders
proposed only 1,000 wee
nd Sunday night riders) w
and virtually ride

transfers between
the Queens Boulevard L
venue at nights. Currentl
00 riders on Saturday an
from Queens Boule
two transfers and/or
exington Avenue dest

ds the hours of "F" expr
from 11PM to 1AM. 9.
additional service at nights,
. Combined express headways for the Queens
vard Line during this period will go from 12 to 6
tes.

nates the "B" Shuttle at nights to 57th Street/
th Avenue.

Requires 400 late night riders between the Sixth
service to transfer or use the "RR" at
ixth Avenue Lines.

Forest Hills between
ive service headways
tes.

at night (assuming that Broadway Line
ce is extended to Forest Hills during
nas, Saturdays and

Sixth Avenue. Operate the

and service
rent services.

the above demand issue.

e "N" and "RR" at nights through
ooklyn.

ices along the Broadway
RR").

Brooklyn Sea
currently, 8
tations
t and
provided
tiona

tages.

ses car miles operated at nig

ne service night service
along the Queens Boul ard Line, turning at 24th
Street/Seventh Avenue,
Street/Broadway, to pr
services).

ns with Study guidelines for route and service
; by being least disruptive of current services.

the above demand issue.

increases night car-miles operated if Queens service is operated (though not as much as Option A, above).

ption to chang

Advantage:

Conforms with Study guidelines for route and service
hang by being least disruptive of c services.

Disadvantage

not relieve the above demand issue.

receding options were re
n of opti
benefit with
within
pon
cost combination
w.

ept that
Manhattan,
ders.

Flushing [illegible]rridor

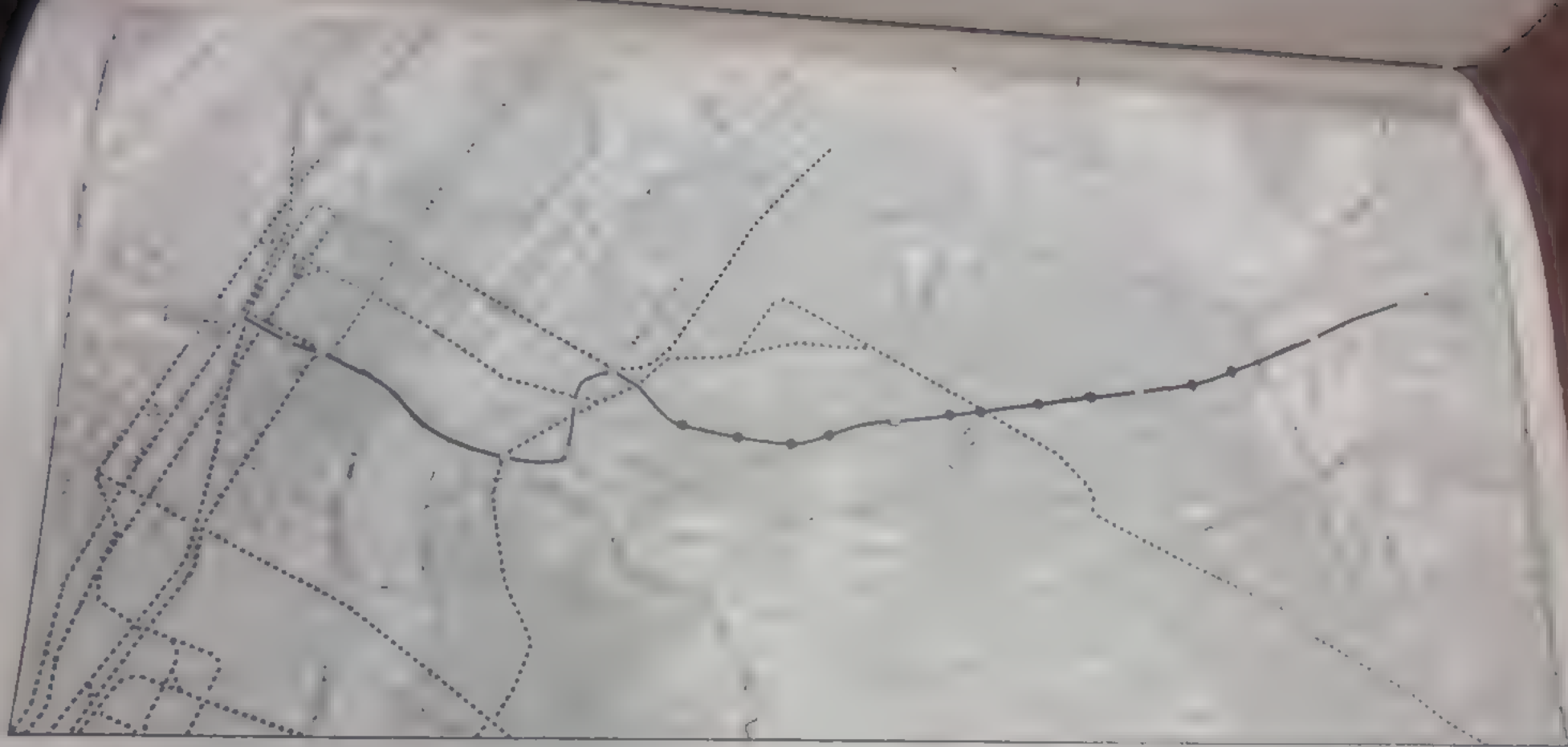
[illegible]ing Corridor is defined by [illegible]
[illegible] through Queens. The corrid[illegible]
[illegible]tion, where the [illegible]
[illegible]
[illegible]way Tunnel from [illegible] From Vernon[illegible]
[illegible]eath 50th Avenue. [illegible]
[illegible]elow grade via 50th Avenue to [illegible]
[illegible]nt Avenue, then continues [illegible]
[illegible] and private right-of-way to Q[illegible]
Street [illegible]
elevated line broadens to three tr[illegible]
[illegible] over Queens Boulevard and [illegible]
[illegible] Flushing Meadows Park.
[illegible] and continues to a [illegible]
[illegible] Street, Flushing.

[illegible]n the corridor is predominal[illegible]
[illegible]ith light and heavy industri[illegible]
[illegible]hern end (between Vernon-[illegible]
[illegible]ommercial activity [illegible]
[illegible]treet Broadway, 82nd [illegible]
[illegible]hing stations. Major [illegible]
[illegible] Shea Stadium and Flus[illegible]

[illegible]
[illegible]hattan, and [illegible]
[illegible] and local [illegible]
[illegible]eet-Flushing (some peak
[illegible] some peak local trains use
[illegible]ne major transfer stations on the
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]oadway Line in Manhattan or Astoria.

[illegible]
[illegible] peak periods, there i[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]tions.

[illegible]g the midday, there i[illegible]
[illegible]
[illegible]
[illegible] 2PM, 14,573 passengers boa[illegible]
[illegible] 3rd Street-Rawson Street.



RAPID TRANSIT SERVICE SUFFICIENCY STUDY

Flushing Corridor

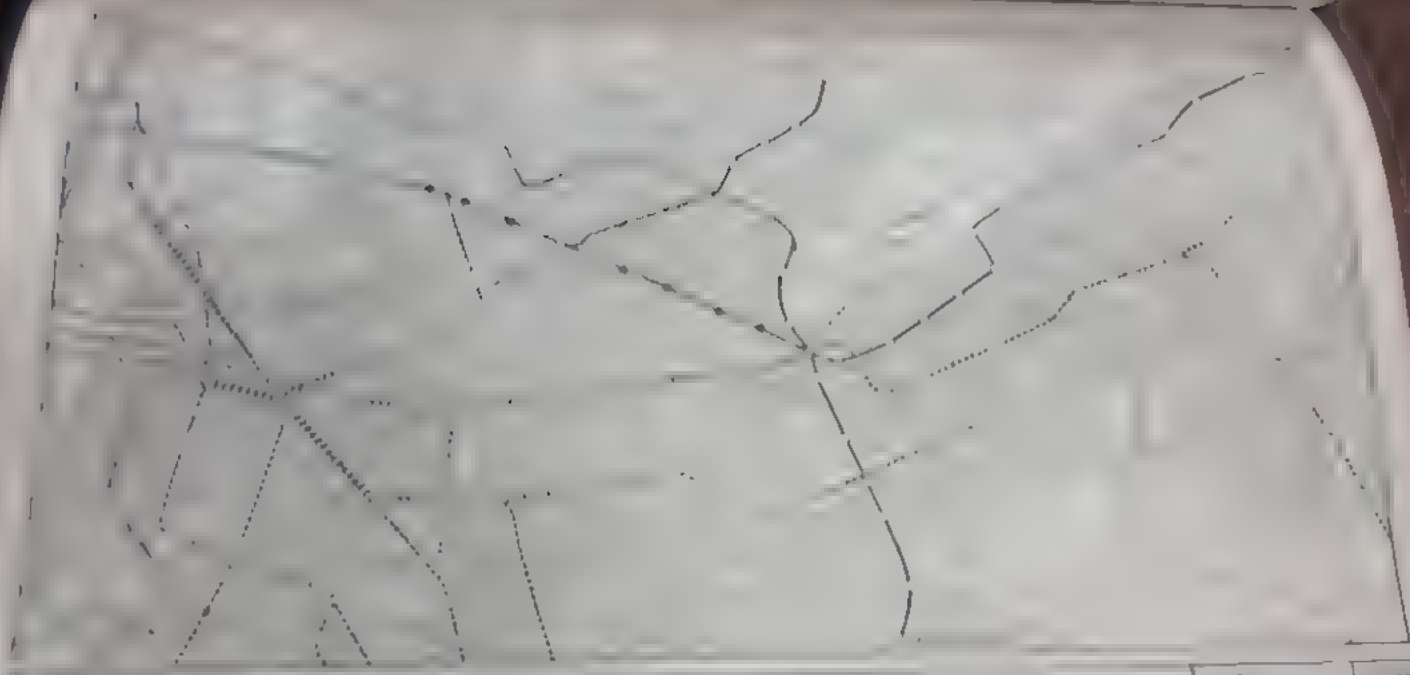
N

M

that decreased travel
s without substantiall
al stations or operati
and express pea

waiting time
y operat

on B-Division (BMT/I
patability.



Eastern Division Corridors

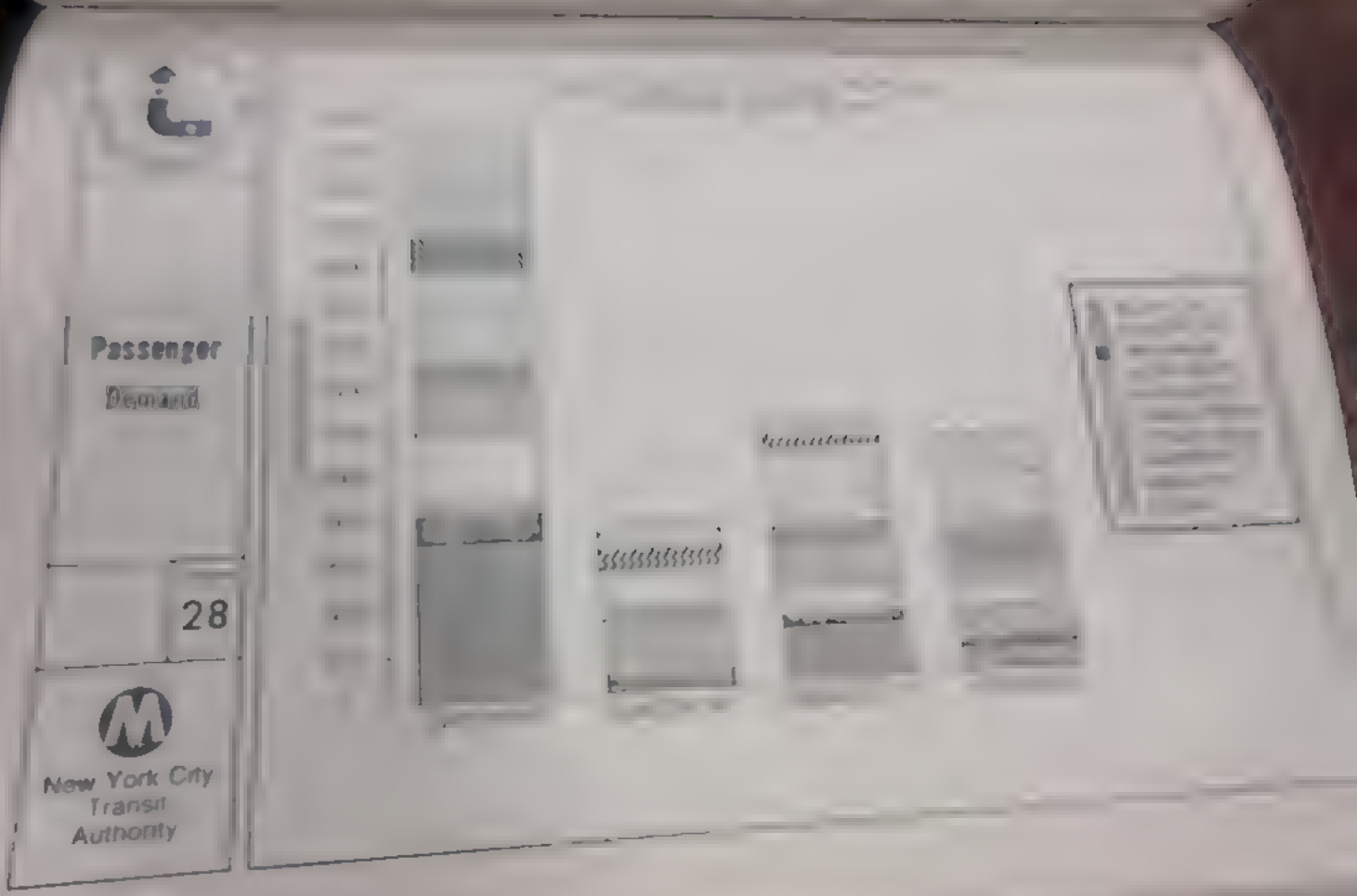
N

27A

New York City Transit Authority


Eastern
Division
Corridor
N
27B
New York City
Transit
Authority

innattan
from Myrtle
:a Avenue,
yn,
percent
3 demand for connections to
trs) and for the Sixth
nized for the Eighth
the Eastern Division.


Passenger
Demand
28
New York City
Transit
Authority

Passenger Demand

29

New York City Transit Authority

n order to
vision

n between the
in Brooklyn
ods, in order to
with an alternative

through service to Lower
le Avenue Line.

ernatives was also influenced by the fact
stively low off-peak ridership from the
a whole, no Eastern Division
off-peak servi

segments differ [illegible] is not a
[illegible]-peak Sixth Avenue service. Due to
[illegible]ation of Br[illegible]
[illegible]ne trains from [illegible] Figure 31).
[illegible] y operate
[illegible] and a second o[illegible]
[illegible]ship is not [illegible]
[illegible]ine riders.

Track Diagram

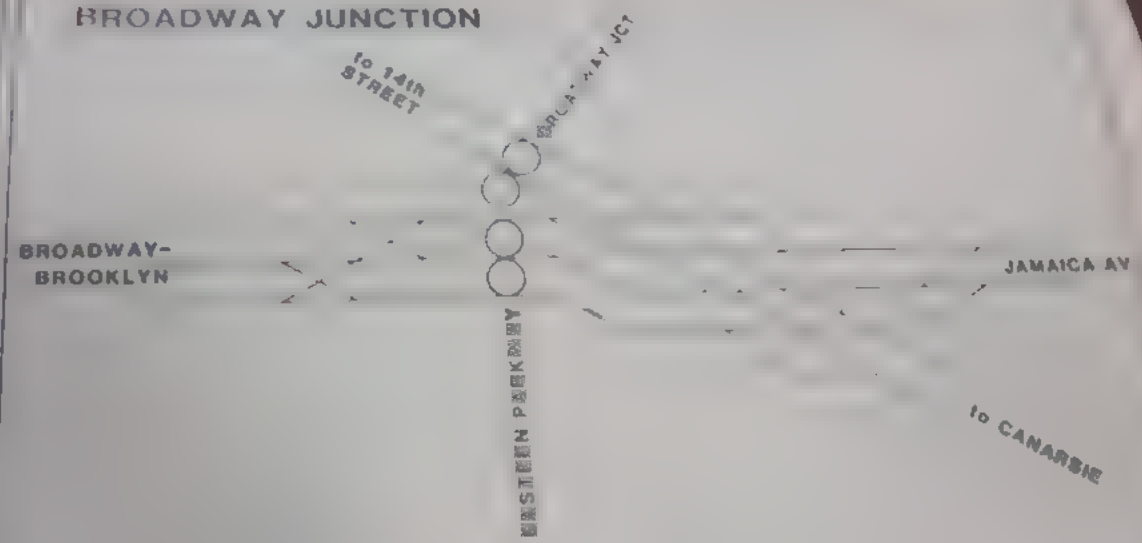
N

FIGURE 30

New York City Transit Authority

EASTERN DIVISION

BROADWAY JUNCTION



NOTE: Yard leads are not shown.

oadway-
provide
D capacity
ces into

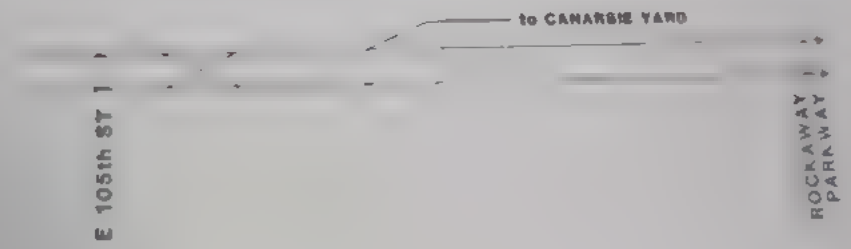
Track Diagram

FIGURE 31

N

New York City Transit Authority

CANARSIE LINE



[illegible] spective, the increase in
[illegible] t by the reduction in "J"
[illegible] ing express between Marcy Avenue
[illegible] arkway (saving about two minutes)--the
[illegible] eadway increase would only increase the
[illegible]

[illegible] Hope.

Passengers travelling between Jamai[illegible]
and Inral Broadway [illegible]
[illegible] service, would have [illegible]
at Eastern Parkway.

terminal
not d
sing consistent p

the same
"K" would c
Brooklyn an
alternately.
and Myrtle
option of op
Avenue was also

operated express
tations would
the service,
local, local stati
tle Avenue would bene
("K") and Nassau
as any off-p
ocal, operati
peak/off-p

e to cross in fr
ich could hamper
ability. However, if the "J"

track prior to the merge point with the "K
eliminating any conflicting movements.

the "K" as a Sixth Avenue Line express is
since the current operation precludes the

were made one of the two express
track configurations dictate that the

Avenue in
th Avenue or contin
The multiple mergers are not
demand.

ixth
corridors

off-peak
ld be paired
off-peak "K" service to
to provide a consistent

riod headways would double for
the Nassau Street and J
,670 riders) of
e.

Operate a peak period "K" betw
Street/Sixth Avenue and Metropolitan Av
d M". The
al on Broadway-Broo

roadway-Bro
venue and Myrtle for an
ixth Avenue Line
of the
-Brooklyn (11AM to 2PM),

towards Nassau Street.

ro Street

[illegible]-peak "K" between 57th Street/
nd Metropolitan Avenue.
[illegible] "M".

[illegible] moderate demand from Myrtle Avenue for
[illegible] from Myrtle Avenue (11AM to 2PM),
[illegible] percent (249 riders) are indifferent.

[illegible] pattern could result, as
[illegible]ssed in Alternative 3.

yrtle Avenue Line.

express on
the "J" as a

be reduced by about two minutes for
riders) of the Myrtle Avenue Line
8AM and 10AM.

k configuration at Myrtle Avenue Interlocking
tates that the "M" express would have to cross in
nt of (or wait for) the local "J". This is
ld affect service
reliability.

The "J" route to Manhattan via Broadway-E lyn
er than the "M"
. Therefore,
r trip will benefit
the "M" express.

he disadvantages ass
ficantly outweigh the bene
or alternatives
rther consideration. Under this proposal,
stern Division Corridors would operate as follow

treet Local) operates between
Queens, only during

Avenue Local) operates between 57th
Manhattan, and Rockaway Parkway-Ca
during peak periods. The "K" oper
and Queens
en 57th Street,
5, at all other times (except nights).

Brooklyn, during
operates between
Manhattan,
ttle remains

fferts Boulevard,
e corridor begins
Avenue L

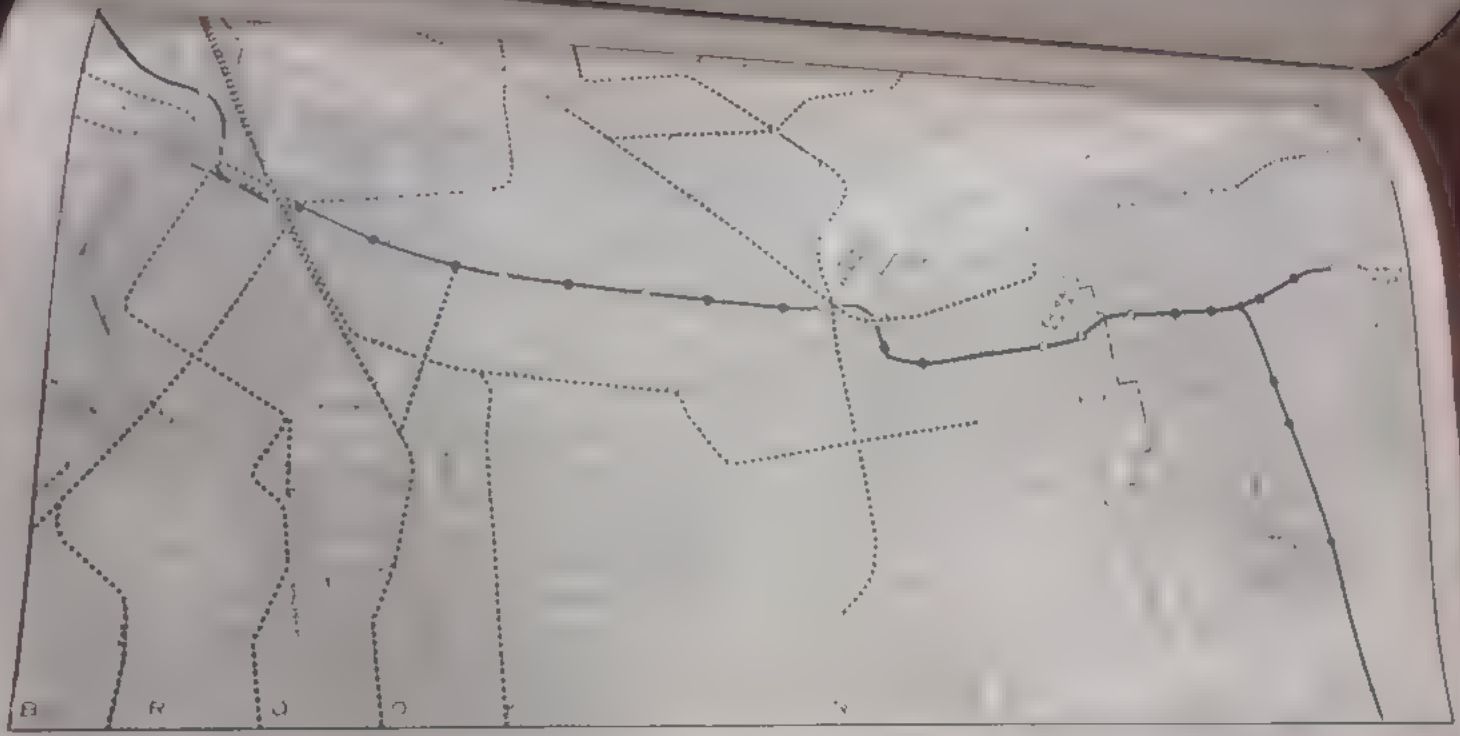
e continues sou
ermerno Street, Lafaye
a Avenue
the narrows t
grade at G
Lefferts Boulevard, with a
mits Lefferts Boulevard
n Stree

four tracks;

ay Line trains
p line
private
to two tr of Howard
ockaway Peninsula:
ay to Rockaway Park
way to Far Rockaway.

ominantly residential, with
residential neighborhoods in
neighborhoods in
ac y in East New
which closely
reas are located
toration Plaza Centre, and
s Boulevard, Far Rockaway,
wntown Brooklyn, a major
ed at the northern end of the

of passenger traffic within
corridor include Aqueduct Rac
seasonally-used station, John F.
the Q-10 bus from Lefferts B
bus from Howard Beach, the Airport
bus from Euclid Avenue, and the
nsula.



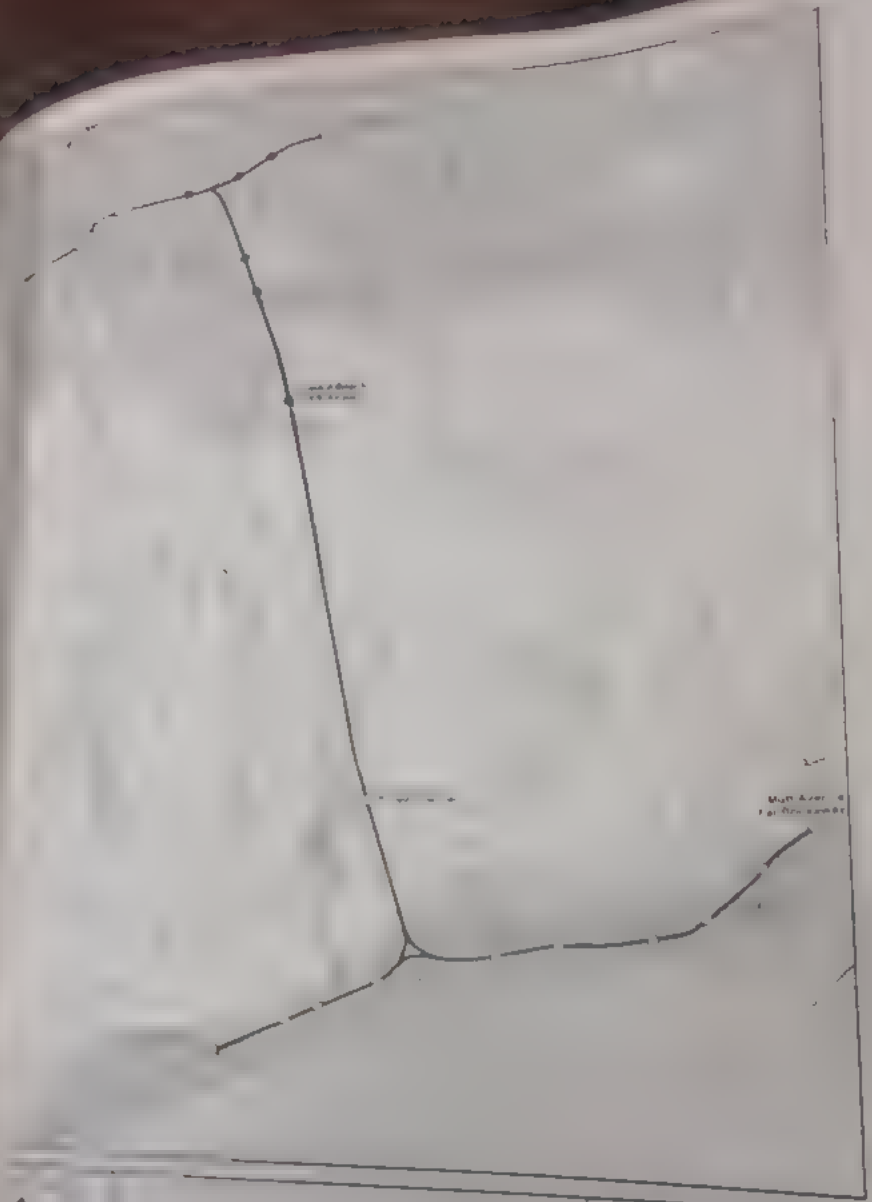
RAPID TRANSIT SERVICE SUFFICIENCY STUDY

Fulton Street Corridor

N

FIGURE 32A

New York City Transit Authority



Fulton Street Corridor

N

FIGURE 32B

New York City Transit Authority

Park, Queen

ulevard, the Bron

Euclid Avenue,

trains operate to

Passengers

return

Euclid Avenue.

ices operating in the Fulton

operates every

ire at East

and Broadway-Brooklyn

transfer to Sixth Avenue

ngers can use the

ranklin Avenue for access to Brighton Line

yt-Schermerhorn for service to the

Bound for Eighth Avenue Line

ues are significant when

Eighth Avenue Lin

ne versus

we

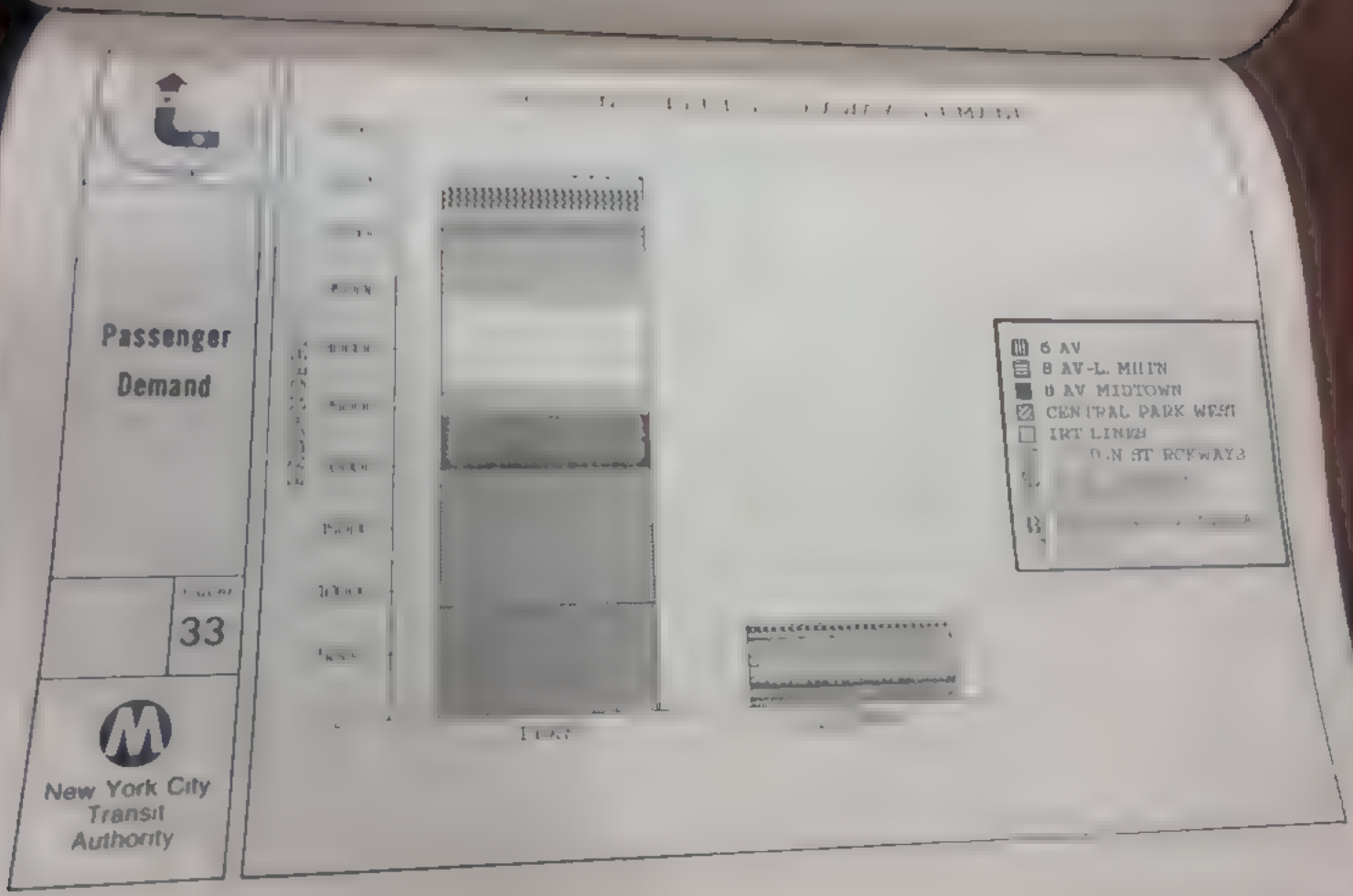
Rockaways

...e service to Midtown is
...hth Avenue Line Midtown
...rrent service operates via

...carry significantly heavier loads
...ains based on RTTD Traffic Checks.

..."A" routes are duplicative for most of

...ew of RTTD Traffic Checks in...
...unnel between Lower Manhattan...
..."A") has the highest r...
...ervice of all the East River...
...Lower Manhattan during the off...


Passenger
Demand
33
New York City
Transit
Authority
6 AV
8 AV-L MHTN
8 AV MIDTOWN
CENTRAL PARK WEST
IRT LINES

in the
does not
the case

merging the "H" at West
Sixth Avenue local services.

stops north of 50th Street.

the
Senge

and the
Eighth Aver

would prov
Boulevard

ting gh the
t/World
doubled.

Street-Rockaways
efit (passengers at
Jay Street, and

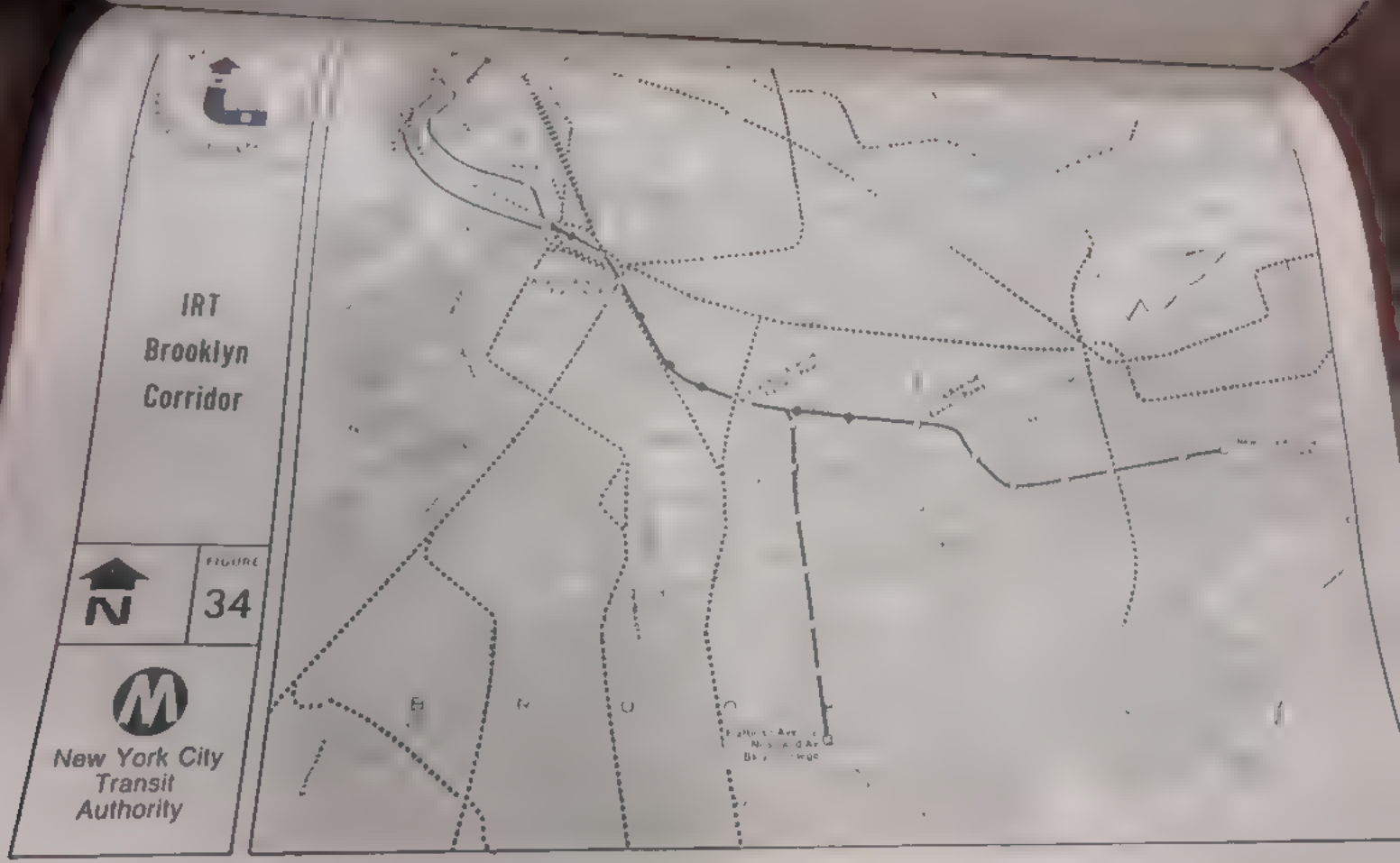
JFK Express reliability.

between 241th Street/
nx, and New Lots Avenue.

operates between 148th Street/
n, and Flatbush Avenue.
s (except nights).

Avenue Express) operates between Woodlawn,
and Atlantic Ave.
During peak periods, at all
the #4 is extended to ngs, and
and during evening, enue,
extended to Utica Av

nis analysis used Bur
since both lines serv
prior to July 1983.


IRT
Brooklyn
Corridor
N
FIGURE
34
New York City
Transit
Authority

or to July 1983.

h Av	Flatbus Local		
	Atlantic Av Express	Express	None
	Atlantic Av Express		

Avenue Line,
percent are
PM), 24 percent
cent prefer the Seventh
rent. Table 20 shows
Lines by line segment.

Avenue Line d the New Lots Avenue Line
lin Avenue have r ly equivalent levels of

ve approximately equal preferences for Seventh
and Lexington Avenue Line service. During
passengers from the New Lots Avenue Line

passengers

Based on this identified demand for

esses

		35.1%		
		28.3%	45	
		36.6%		

. FLATBUSH AV SEGMENT

			1,032	25.5%
		35.2%	833	20.6%
Av	7,834	23.6%	2,181	53.[illegible]%
	[illegible]	41.2%		

Segment 10

				[illegible]
Lexington Av	[illegible]			[illegible]
Seventh Av	3,712			1.[illegible]%
Segment Total	17,452		1,906	

Av - NEW LOTS AV SEGMENT

[illegible]				
Lexington Av	3,703	29.0%	399	21.4%
Seventh Av	3,468	27.2%	529	28.4%
	[illegible]	[illegible]	[illegible]	[illegible]
	12,754		1,865	

LEALTH CORRIDOR SEGMENTS

Lexington Av	30,169	33.3%	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
Total All Segments	90,632		[illegible]	53.1%
			[illegible]	

nth
ff-peak

kend periods
perated
unday

rror

ength
the
were on

y looking
Line vs.
s. New Lots Avenue
, #3, #4, and
possibilities,
crossings. For
rned at Atlantic
, in order to
al stations between Atlantic and
Seventh Avenue Line service must be
e east. Otherwise, the track

reliability and running time.

attan

the Lex
this will benef
Avenue Line

t Atlantic Avenue, as
quires the #3 to cross the #4, and
the #5, a maneuver which is not
desirable.

nd the #2 and #4 would share platforms
loss of the dedicated platforms
e Line and Seventh Avenue Line
ces could cause passenger confusion.

Operate the #4 to Flatbush Avenue and the #5 express to Utica Avenue, midday, evenings and weekends.

posal provides no change in the peak peri
service pattern is as follows:

vides a through service to the Lexington Avenue
t all times from the Nostrand Avenue Line; in

sengers.

es off-peak through to the Lexington Avenue
Bergen Street, Grand Army Plaza, and Eastern
tations; in the midday
nal 29.1 percent (437) of
disadvantaging any existing passengers.

	[illegible]tbush Avenue [illegible]cal	Flatbush Avenue Local
[illegible]enue	Atlantic Avenue	Shuttle Service in the Bronx

[illegible] Avenue. South [illegible] above [illegible] of-way to [illegible] elevated [illegible]

the corridor is predominantly [illegible] density [illegible] located adjacent to the [illegible] cDonald Avenue. [illegible] are located at southern [illegible] commercia [illegible] the [illegible] stations [illegible]

and Fort [illegible]

Two route [illegible] currently provide service to the Culver Lines: the "F" and "G" [illegible] The current operation of these routes [illegible] follows

[illegible]

northbound-AM/southbound [illegible]

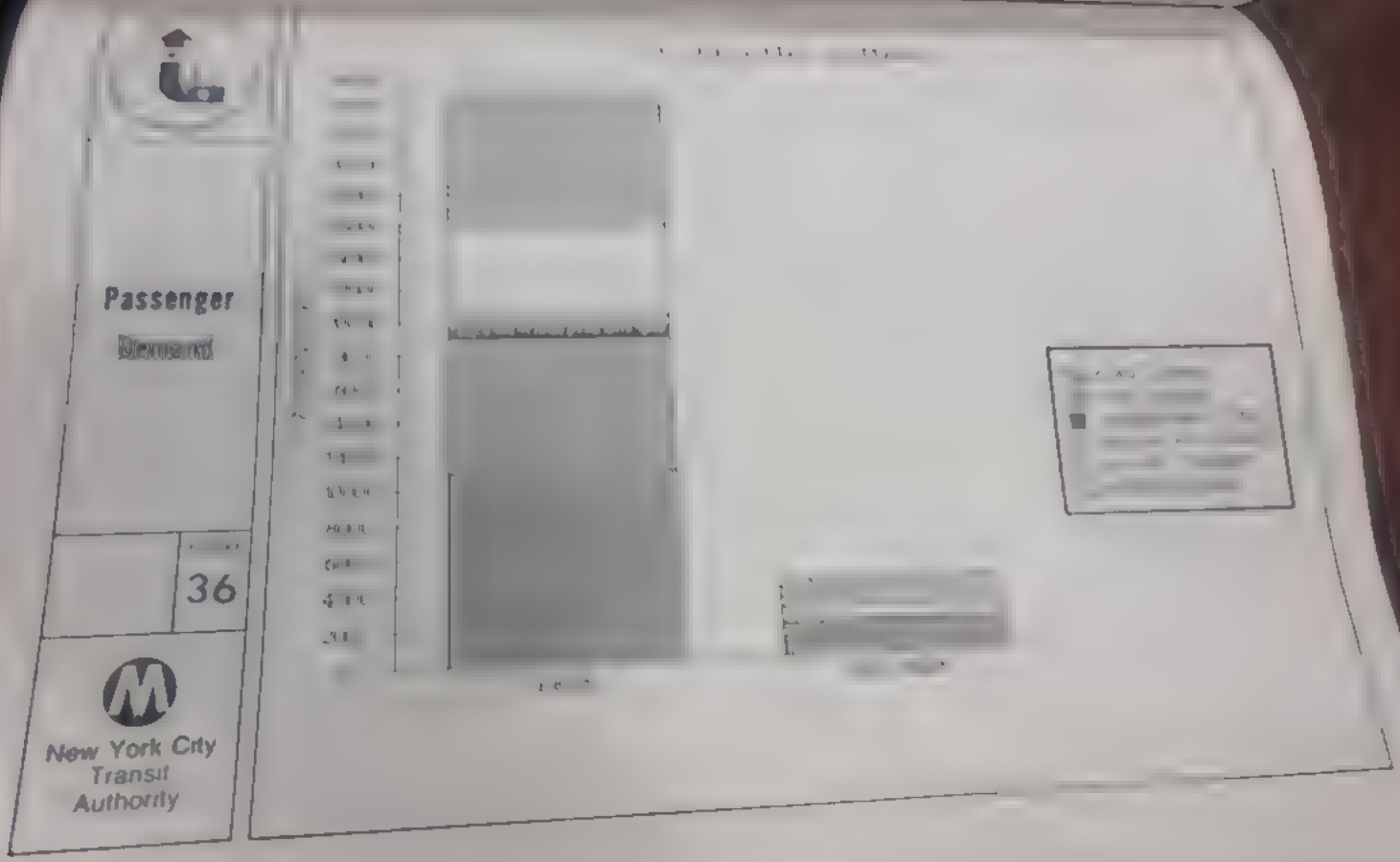
"GG" [illegible] rosstown Line Local) operat [illegible]

re are four major transfer stations for th [illegible]
At Jay Str [illegible]
the Eighth Aven [illegible]
Brooklyn and [illegible]

Culver
Corridor
N
35

n permits expansion of
two express tracks between Bergen
currently unused, while a single
nue and Kings Highway is
h Avenue and Kings Highway.

, the Authority operated peak period
between Bergen Street and Church Avenue.
Avenue to clear the express
express operation and to
local


Passenger
Demand
36
New York City
Transit
Authority

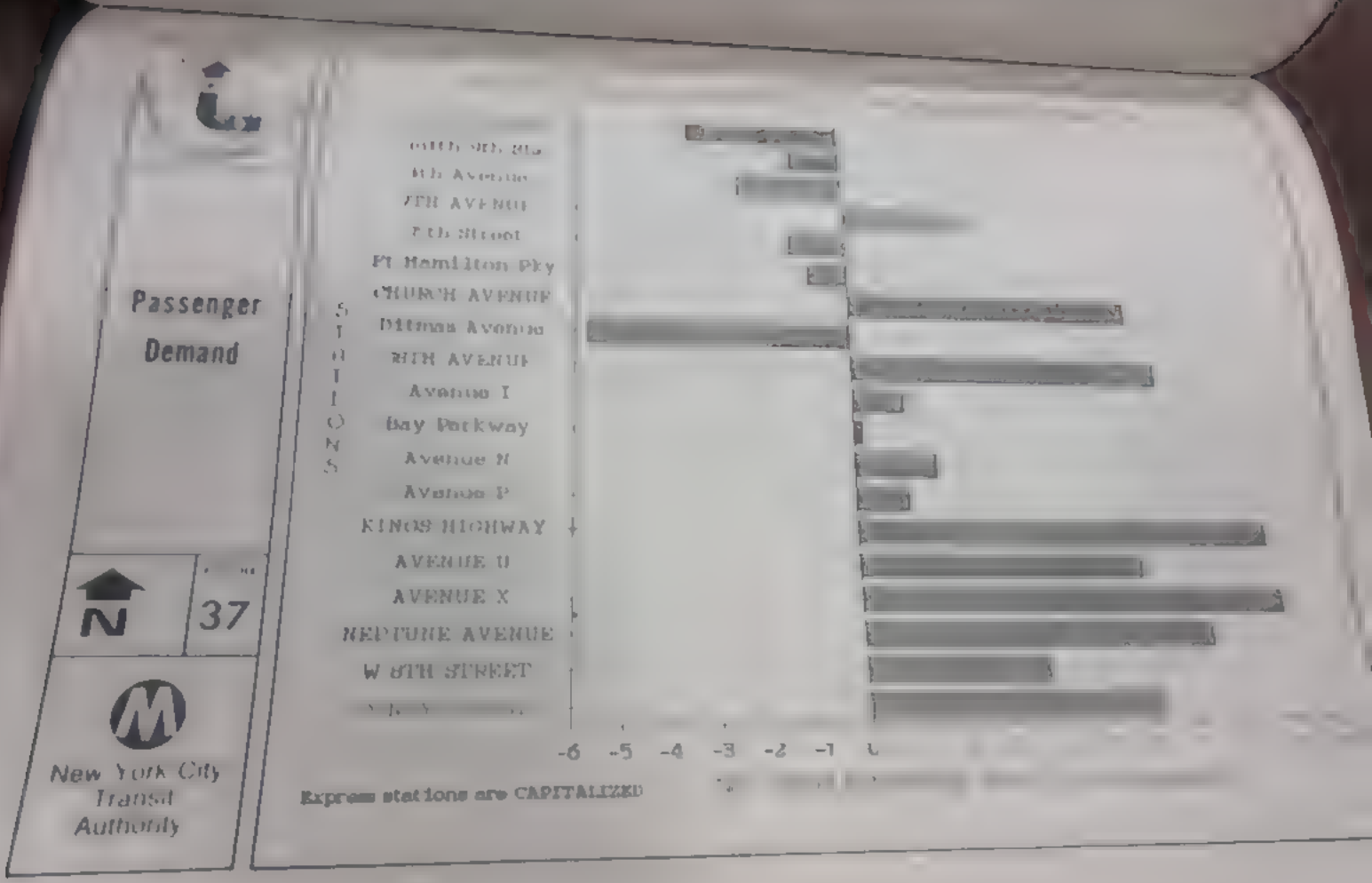
ntinental
and
ring
enue,

Jay Street and Coney
s shorter than the current
average waiting time would
ers at local stations, a
d in terms of "people-minutes"

People-Minutes Of
Added Waiting Time | 0

graphically demonstrated in Figure 37.

by the Brookl
Community B


Passenger Demand
N
37
New York City Transit Authority
STATIONS
Church Ave, Bks
8th Avenue
7TH AVENUE
7th Street
Ft Hamilton Pky
CHURCH AVENUE
Ditmas Avenue
18TH AVENUE
Avenue I
Bay Parkway
Avenue N
Avenue P
KINGS HIGHWAY
AVENUE U
AVENUE X
NEPTUNE AVENUE
W 8TH STREET
-6 -5 -4 -3 -2 -1 0
Express stations are CAPITALIZED

ns
benefit
and an

Southern
Division
Corridors
N
38

on of
.h Street and
.3th Avenue in
Street stations, and at
served by all stations
ue. New Utrecht High School,
another generator in the

ently provide service to the Fourth
and West End Lines: the "B", "N", and
operation of these routes is as follows:

and Coney Island, Brookl
except nights;

treet-Four

dway Expre
town-AM/Upto
eventh A
at all
N" operates exp
Street/Fourth A
ing peak periods).
between 36th

, operates between Ditm
and 95th Street/Fourth Avenue
periods, an alternative
as the "RJ" (Nassau Street Loca
bers and 95th Street/Fourth Avenue
traffic.

rvice operated by the

SERVICE PATTERNS

	BROOKLYN ROUTINGS		
	SERVICE	BASE SERVICE	NIGHT SERVICE
	4Av Express Skip DeKalb	4Av Express Stop DeKalb	Shuttle to 36 St/4 Av
	4Av Express Skip DeKalb	4Av Express Stop DeKalb	Shuttle to 36 St/4 Av
Broadway	4Av Local Local	4Av Local Local	4Av Local
	4Av Local		None

ooklyn t
in Manhatt

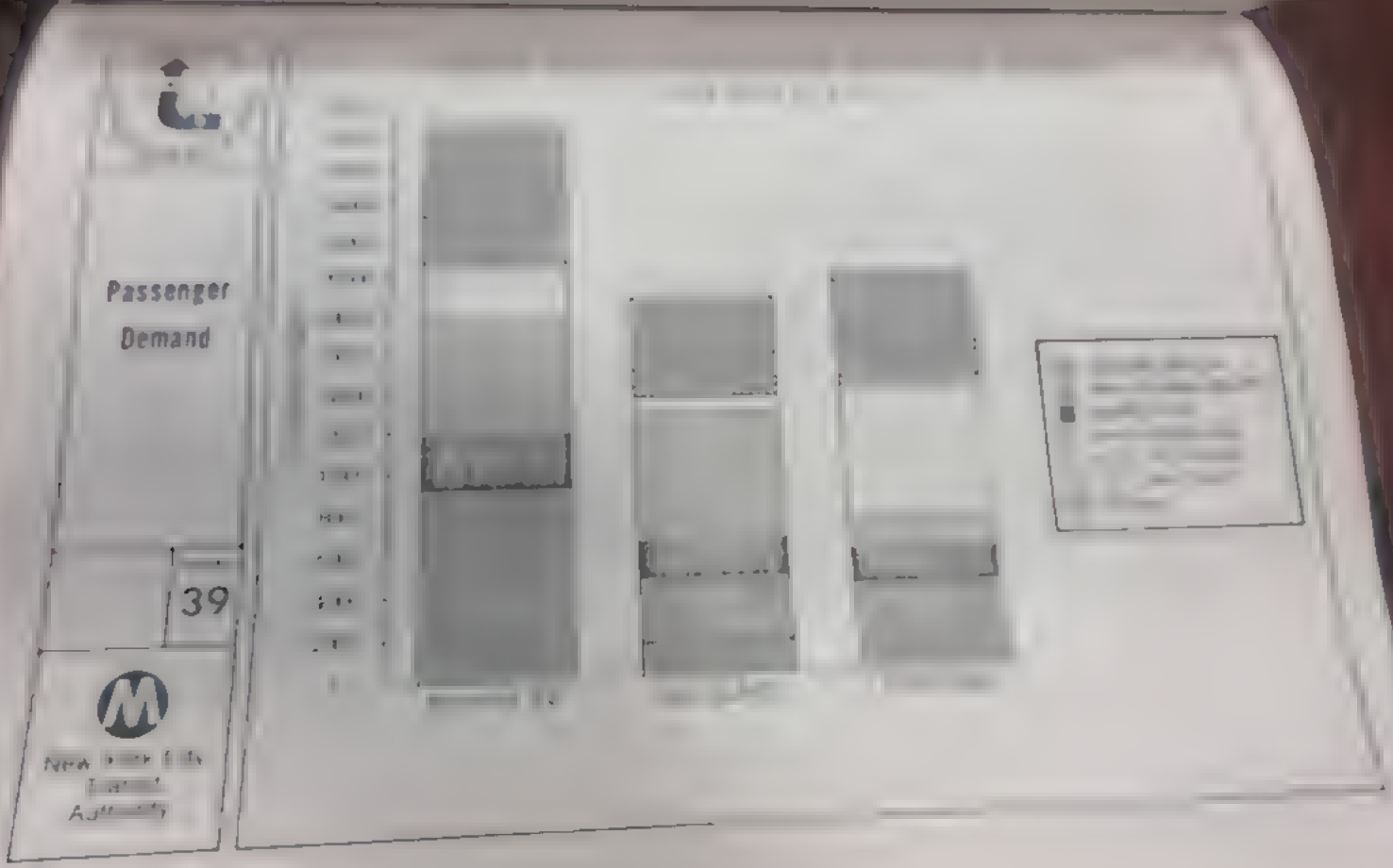
ugh further tra
on the Fourth Av
st End and the S
/New Utrecht Avenue

period demand for service from the three corridors
Fourth Avenue L show a higher
and Downtown Brooklyn
335 passengers - 41.3%) than West End Line
engers - 32.2%) or Sea Beach Line riders (6453
The proportion of passengers destined for
passengers -
is higher on the Sea Beach Line (7173 passen
ine (8278 passengers - 39.5%), than on the
passengers - 29.8%). However, the
passengers from the Fourth Avenue Line is

LE 24
OD D MAND FOR SERVICE
6AM to 10AM

	H AVENUE St-Pacific)	SEA BEACH (Coney Is-59St)		WEST END (Coney Is-36st)	
	2,696	8.3%	1,566	8.0%	1,669
	6,528		3,141	17.1%	3,575
	2,611				1,517
	5,908				1,608
	2,632				1,670
	325				
	7,947				5,558
	28,647				20,967

ff-peak service demand is shown in Table 25. These
t that off-peak demand is adequately addressed by
ervice pattern. In addition, movements to and
End and Sea Beach Lines are facilitated by the
e transfer (all lines stop at DeKalb Avenue off

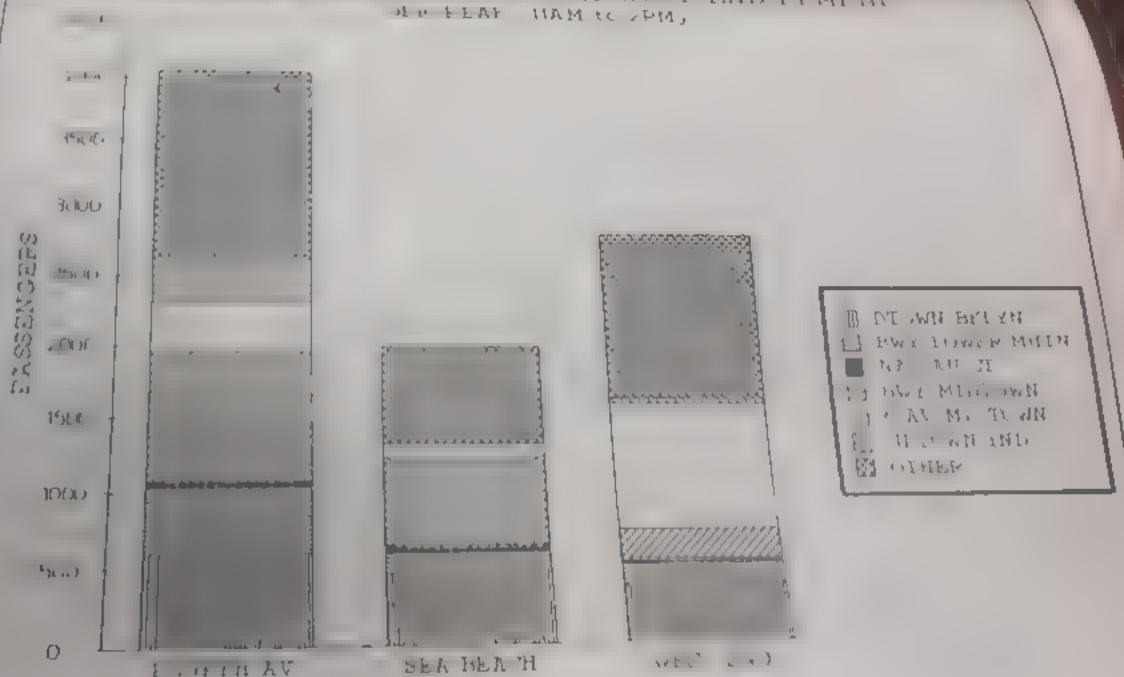

Passenger
Demand
39

RJ* are duplicative, with
etween 95th Street and Lower
two blocks of each other.

d by the alignment of the
The corridor begins at DeKalb
rth Avenu
line runs
Avenue as a
Street and
Avenue,
Franklin
re Continues
thence via a diagonal path to
and East 16th Street to a Joint
Keepshead Bay Road. From
of East 16th
al path to Coney Island
the line
Avenue and Brighton
structure

Passenger Demand

FIGURE 40



New York City Transit Authority

[illegible] and runs above that [illegible]
[illegible] narrows [illegible]
[illegible] f-way to a [illegible]

[illegible] corridor [illegible]
[illegible] there are [illegible]
[illegible]
[illegible]
[illegible] from the subway [illegible]
[illegible] three [illegible]
J, M, and U. The Kings Plaza
[illegible] the Kings Highway station via
[illegible] station via the B-3 bus.

[illegible] Avenue Line trains, Brighton Line tra[illegible]
[illegible]native routes available at DeKalb Avenue.
[illegible] the Montague Street Tunnel to [illegible]
[illegible]ssau Street Lines. Trains can op[illegible]
[illegible]dge to the Broadway Line or to the [illegible]
Sixth Avenue, trains from the Manhattan
[illegible] the local track or the express track.

[illegible] Service

[illegible] to the Brighton
[illegible]ine: the "D", "M", and "QB". The current operati[illegible] of these
routes is as follows

"D" (Sixth Avenue Express) operates between 205th Street/
Bainbridge A[illegible], the Bronx, and Brighton Beach,
Brooklyn, at all times. The "D" is extended to Coney
Island, Brooklyn, weekdays between 8PM and 6:30AM,
Saturdays and Sundays. In Brooklyn, the "D" operates
express service between Prospect Park and Brighton
Beach during the hours that the "M" operates to Coney
Island.

[illegible]sau Street Local) operates between Metropolit[illegible]
[illegible]lyn, [illegible]
[illegible] times, [illegible]
[illegible]huttle operates between [illegible]

[illegible] Broadway Express) operates between [illegible]th Street Seventh
Avenue, Manhattan, [illegible] Coney Island, Brooklyn, during
[illegible]ods in the direction of peak traffic.

[illegible]addition, the Franklin Ave[illegible] shuttle [illegible]ts with the
[illegible] the Brighton Line and Franklin Avenue
[illegible] free transfers provided at both
[illegible] Avenue Line is a[illegible]red to permit the
continue south to Coney [illegible] the historic service
[illegible] when the line s

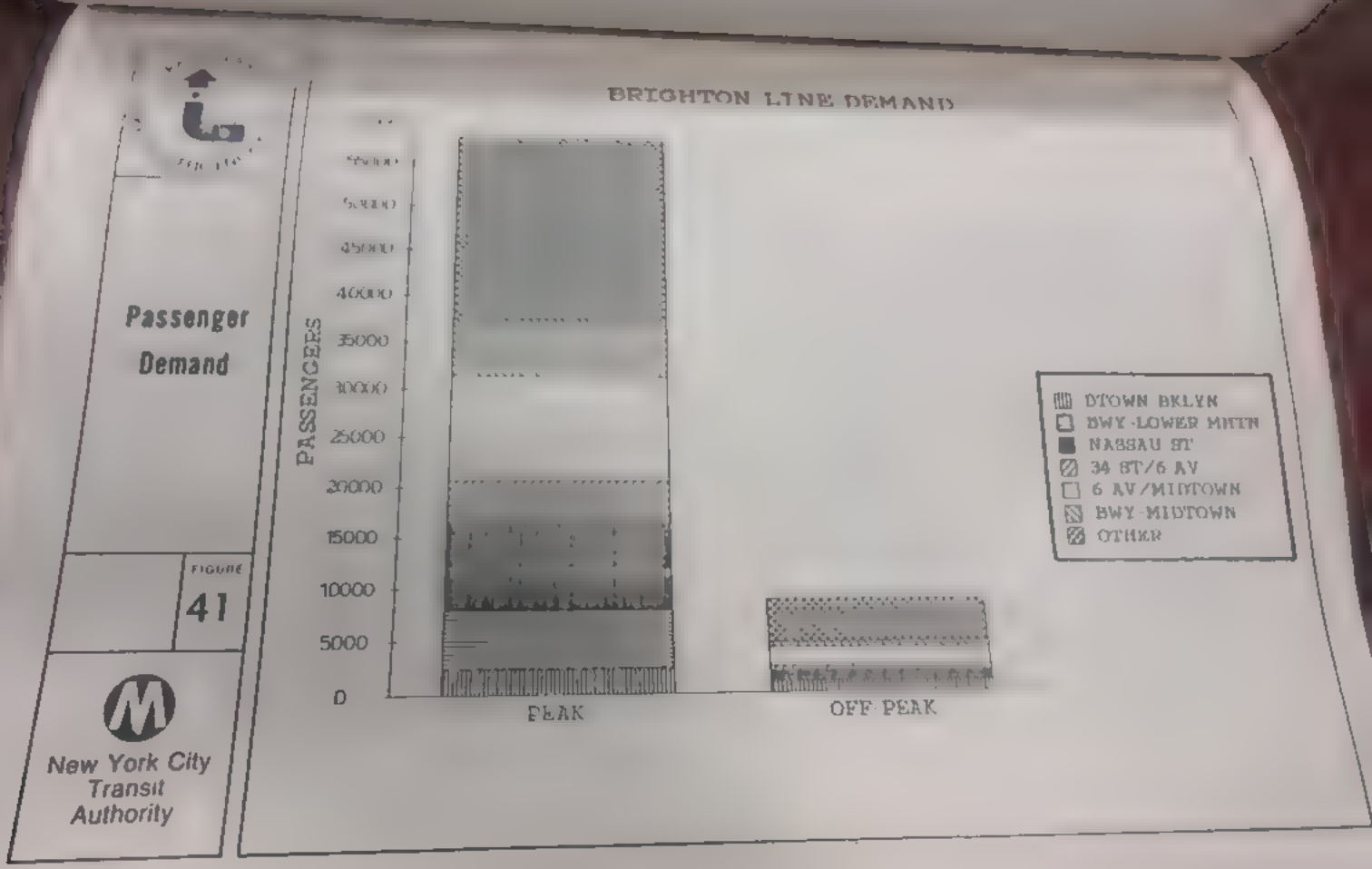
West
eet between

"D". The remaining riders
services. transfer before leaving
Line. During
er Broadway Lin-

"D" service.

TABLE 26
BRIGHTON LINE DEMAND

	PEAK (10AM)	OFF-PEAK (11AM - 2PM)
ATLANTIC AV	1.1%	
DEKALB AV	6.0%	
		3,378
		1,144

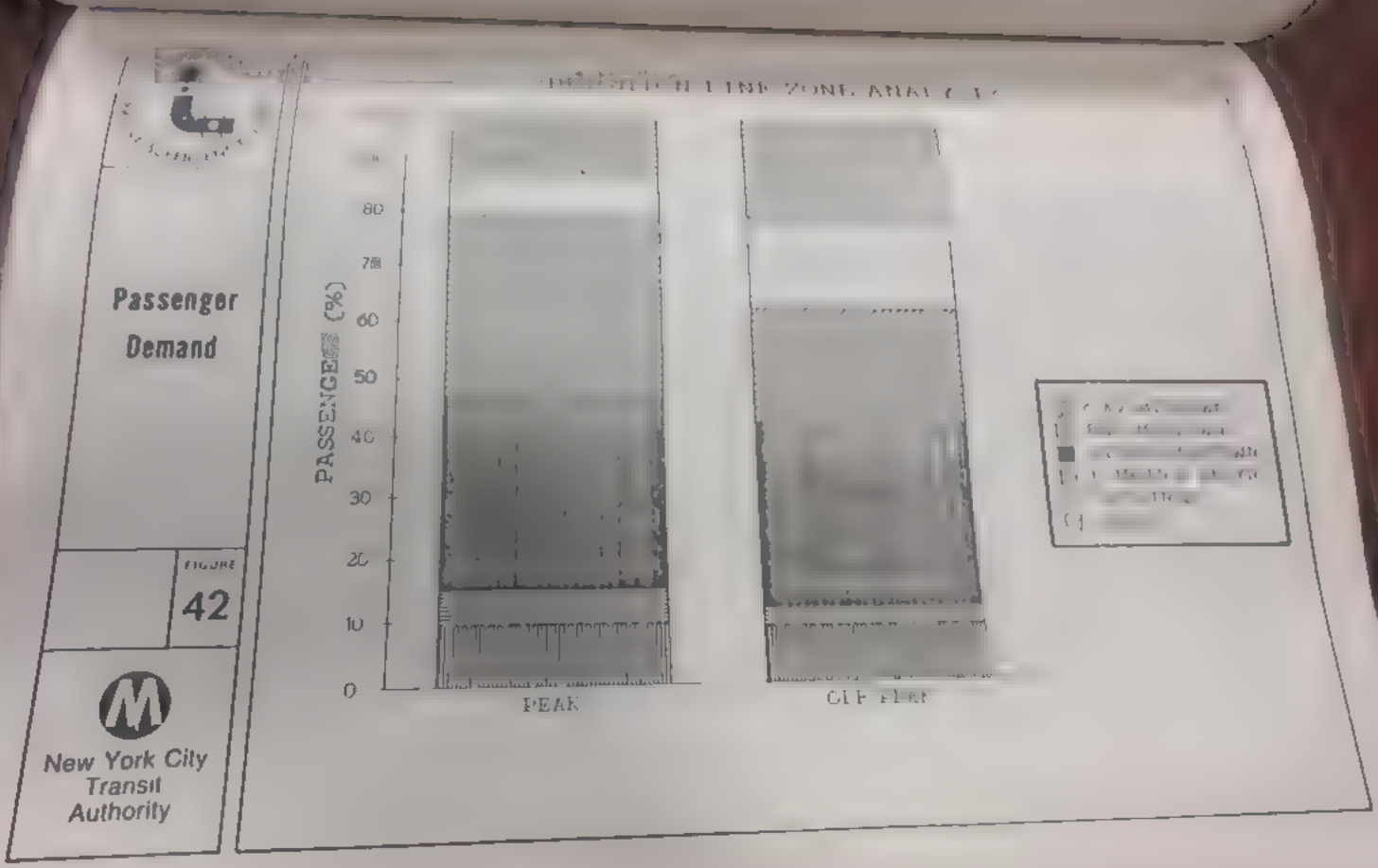

BRIGHTON LINE DEMAND
Passenger Demand
FIGURE 41
New York City Transit Authority
PASSENGERS
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
PEAK
OFF PEAK
DTOWN BKLYN
BWY-LOWER MHTN
NASSAU ST
34 ST/6 AV
6 AV/MIDTOWN
BWY-MIDTOWN
OTHER

nes or Br
adway Line
erent-Midtown
or 34th Street
y either th

ne analysis indicated that, during peak periods,
nt of all Brighton Line riders were traveling to
tinations. Of these Brighton Line riders,
prefer Sixth Avenue Line destinations, 12 percent
way Line destinations, and 68 percent are
etween eit

e: issues identified for the Brighto

combined frequency of service o
Line during


Passenger Demand
FIGURE
42
New York City Transit Authority
PASSENGER (%)
80
70
60
50
40
30
20
10
0
PEAK

wing alternatives were consid[illegible]
es identified for the Southern Division.

[illegible] and "RJ" service with more [illegible] peak period [illegible] frequent [illegible] service, designed [illegible] Avenue, [illegible] 57th Street/Seventh Avenue, [illegible] Brighton Beach, Brooklyn, operating exp[illegible] on the Sea Beach Line.

ussion:

osed, the morning "NX" would operate from Brighton [illegible] then run to 59th Street/Fourth [illegible] The "NX" via the Sea Beach Line express tracks. [illegible] erate express on the Fourth Avenue Line (skipping [illegible] the Broadway Line in Manhattan, [illegible] Avenue. The "NX" would terminating at [illegible] Street [illegible] operate as a peak period service only in the peak direction [illegible] traffic. [illegible] this proposal, the "QB" would be [illegible] more attractive [illegible] stations and "M" service [illegible] Brighton Line service in the peak direction of traffic. The "RJ" [illegible] be eliminated as the "NX" would reduce the peak [illegible] capacity of the Montague Street Tunnel. However, [illegible] provides Fourth Avenue Line service to Broadway [illegible] "M" service would be operated to Nassau Street.

tages

The "NX" would decrease the running time between Stillwell Avenue and Manhattan and would attract approximately 5,700 passengers.

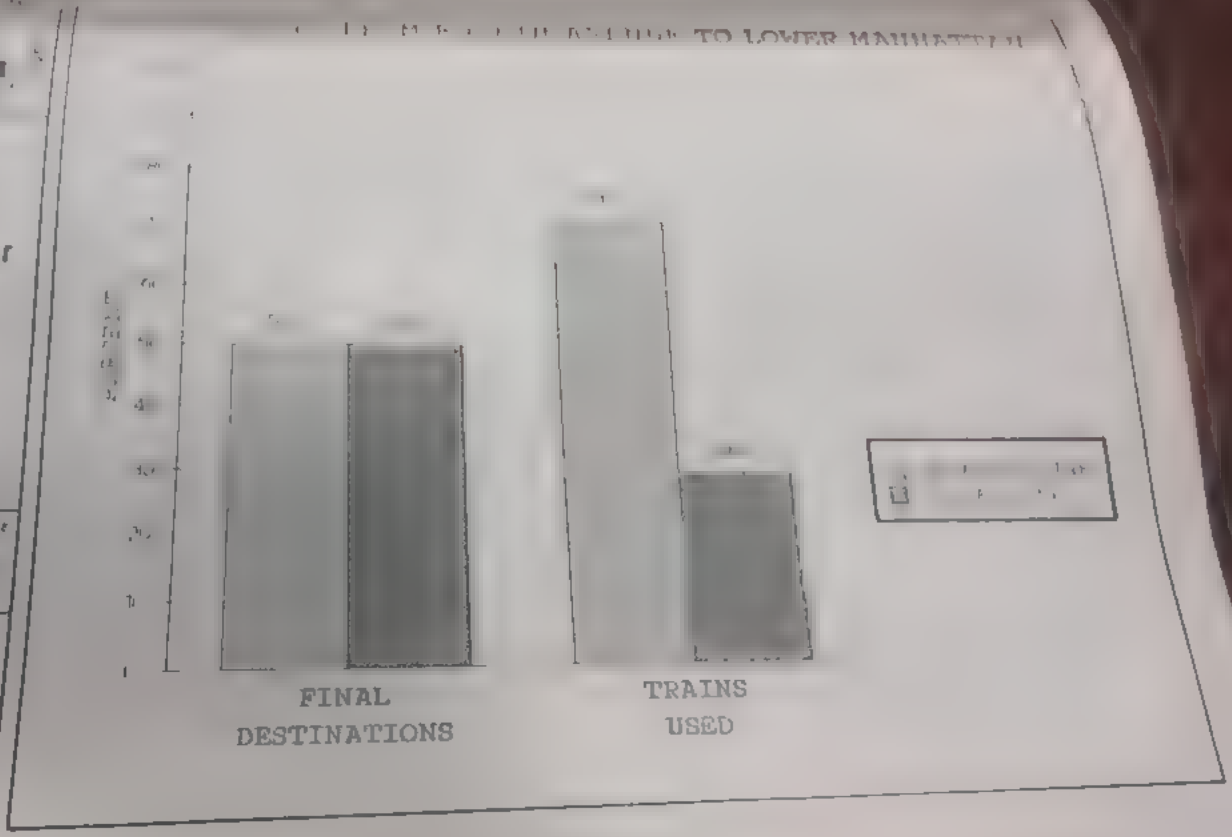
he "NX" reduces the need to operate two special [illegible] and [illegible] by combining them into one special service, simplifying the overall service pattern.

eak "M" service would be increased, providing more direct Brighton Line service to Downtown Brooklyn and [illegible] Manhattan, better serving 9,923 riders.

Passenger Demand

FIGURE 43

New York City Transit Authority



would

and the
rth

an average load

the West
sengers.

for
adway
of the
Lower Manhattan, so
transfer for Nassau

satisfy the West End Line
destinations over Nassau
the Line "RR"
ne
engers may
transfer

Brighton Line
would be eliminated

ehr
ekalb Avenue
tons in Midtown

Tab

From											
57St/6Av											
50St/6Av											
42St/6Av											
34St/6Av											
23St/6Av											
14St/6Av											
(West4St)											
Spring St	[illegible]	[illegible]									
Canal St	[illegible]	[illegible]									
Chambers	53	162									
/WTC											
TOTALS	58	221									

tually
them
train
of the

the lower level
treet while other services to
rrive at the upper level. This
confusion and inconvenience.

pattern for
eak period.
th Street/Sixth
services

express
of peak trains. Currently, the
Track B3 or separate to Church Avenue

nnecting the end of Track M to
t turning local trains at Utica Avenue
Avenue trains to New Lots Avenue.
Tracks 1, M, and 4. Express
Tracks 2, M, and 1, and
currently, operating the
ning the local at Utica
tes to merge in both

Line - Queens Plaza ("E", "F", "G", "R"
Switch at
would
the "RR" from to Forest at
osed. Currently, turning the "G" would
erging first with the "RR", then with the "E" and
relaying on Track 1, then merging again with the
ly w th the "RR" again. These
uld eliminate the double merger with the "RR".

Track Diagram

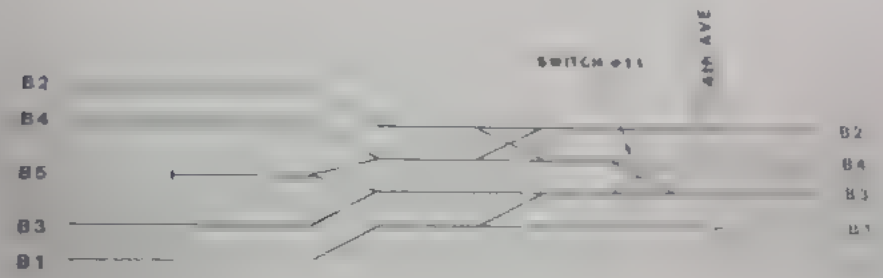
N

44 A

New York City Transit Authority

CULVER LINE

CONVERT SWITCH #11 TO DIAMOND CROSSOVER



Track Diagram

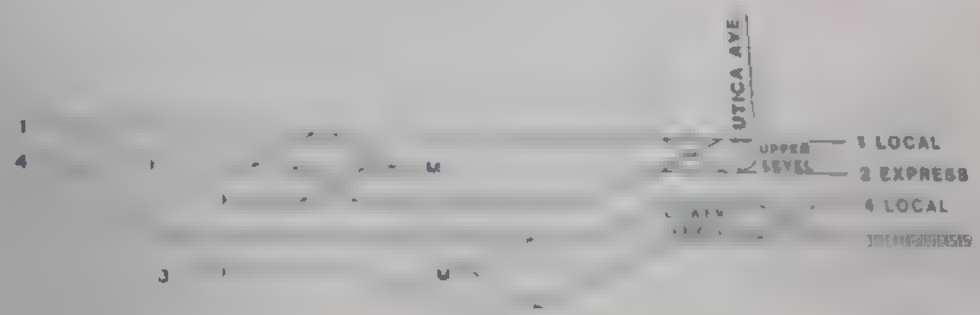
N 44B

New York City Transit Authority

NEW LOTS LINE

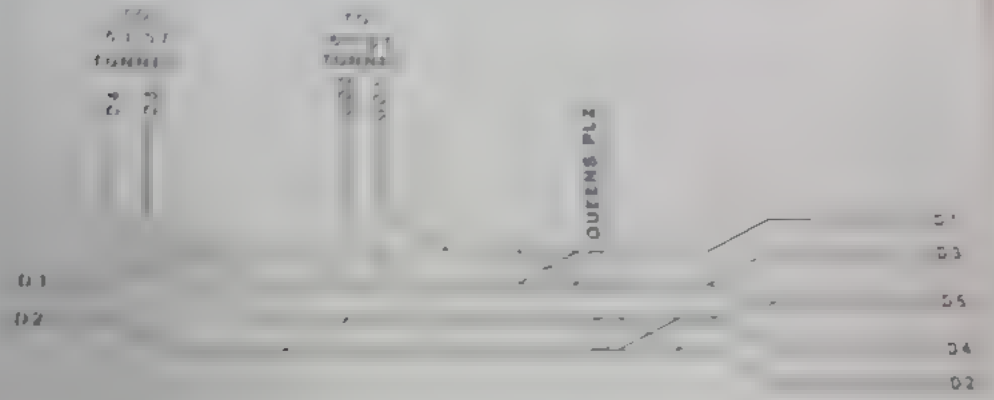
SWITCH FROM TRACK M TO TRACK 1

SWITCH FROM TRACK 4 TO TRACK B



QUEENS BLVD LINE

SWITCH FROM TRACK D2 TO D4 SWITCH FROM TRACK D3 TO D1



Track Diagram

N 44C

New York City Transit Authority

- Howard Beach [illegible] plan[illegible]
ich interlocking [illegible] would perm[illegible]

F3 to
wou[illegible]

"
arthbound [illegible] southbound
[illegible] nuing to a[illegible]
nd platform if [illegible]

ton Street Line - Lafayette
tall a switch at Lafayette
movement from Track [illegible]
turning of an addit[illegible]
ittan operating thro[illegible]

Line - 59th Street [illegible] approximately [illegible] shuttle
ew switch from Track F4 to F3 at [illegible]
This would permit relaying th[illegible]
at 59th Street rather than at 36th Street, saving crew [illegible] necessary,
hours and car miles at night (this would [illegible]
if the "N" was extended to [illegible] at all times
[illegible] study

[illegible] ine - Broadway-Lafayette
[illegible] new diamond crossover [illegible] Tracks B1 and
B2+B0 to permit direct movement between [illegible]
[illegible] to operate a Sixth
Avenue expres[illegible] a frequent through
Eastern Division. [illegible] ine north of West
local service between the [illegible] ne south of West
Fourth Street and the [illegible] ussed in t
Fourth Street. Like the [illegible] s would also permit
Intra-Manhattan Corridor [illegible]
operating southbound Eighth [illegible] ains through to the
Manhattan Bridge in an emergency, [illegible] h would greatly
improve R[illegible] ability t[illegible] and "D" trains via
[illegible] when there is a service disruption on the
[illegible] Line, without requiring the current
[illegible] rvice disruption to Brooklyn.

[illegible] Line - 50th Street ("A","AA","CC")
[illegible]
[illegible] ement [illegible] track A4 to A2 and from
track A3 to A1. This would simplify the [illegible] ts involved
[illegible] South of
[illegible] ces at the local 59th Street [illegible] m. These switches
[illegible] through 59th Street.

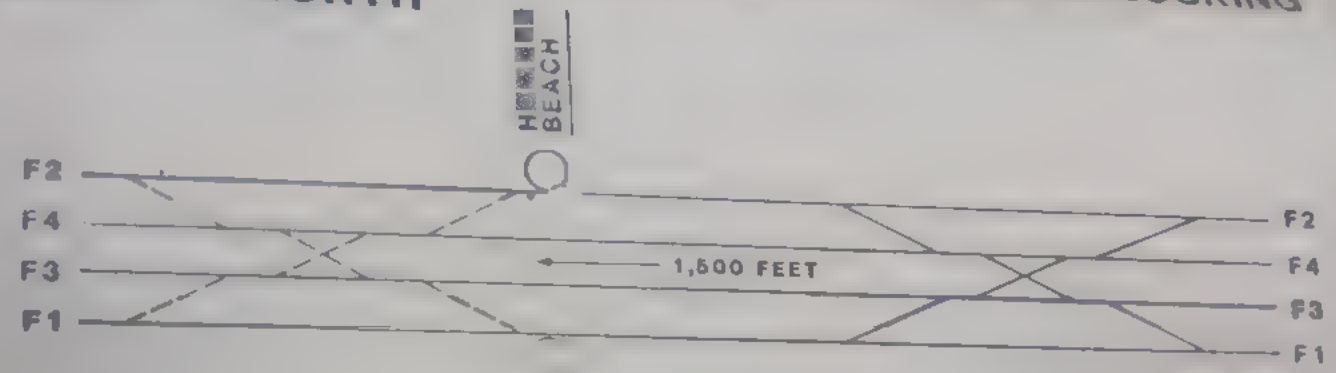
Track Diagram

FIGURE 44D

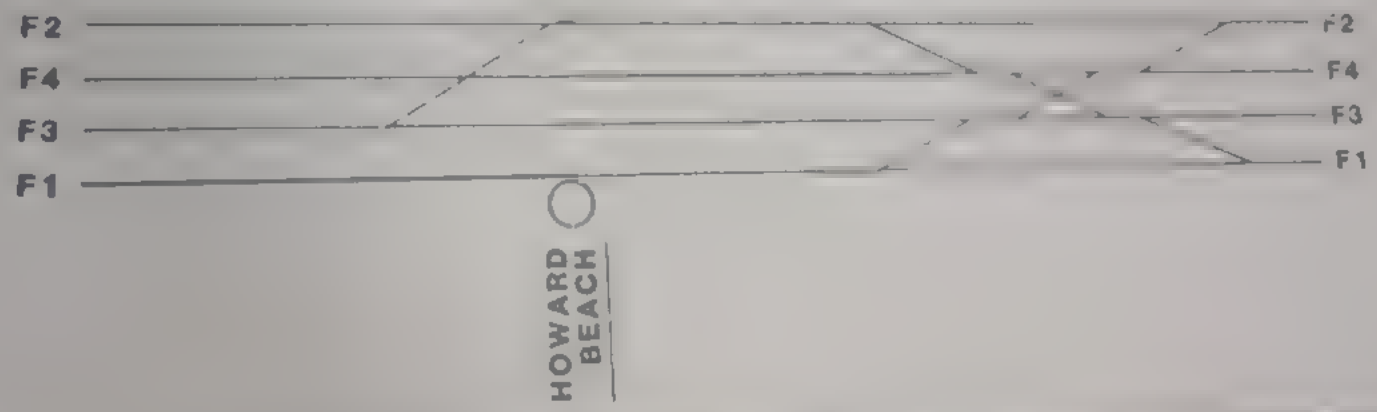
New York City Transit Authority

ROCKAWAY LINE

ALTERNATE "A"– MOVE HOWARD BEACH INTERLOCKING 1,500 FT. NORTH



ALTERNATE "B"– SWITCH FROM TRACK F3 TO TRACK F2



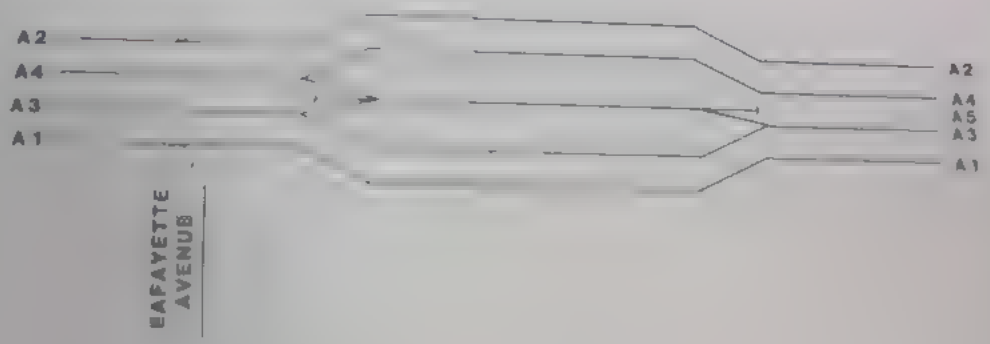
Track Diagram

N

44E

New York City Transit Authority

FULTON STREET LINE
SWITCH FROM TRACK A3 TO TRACK A5

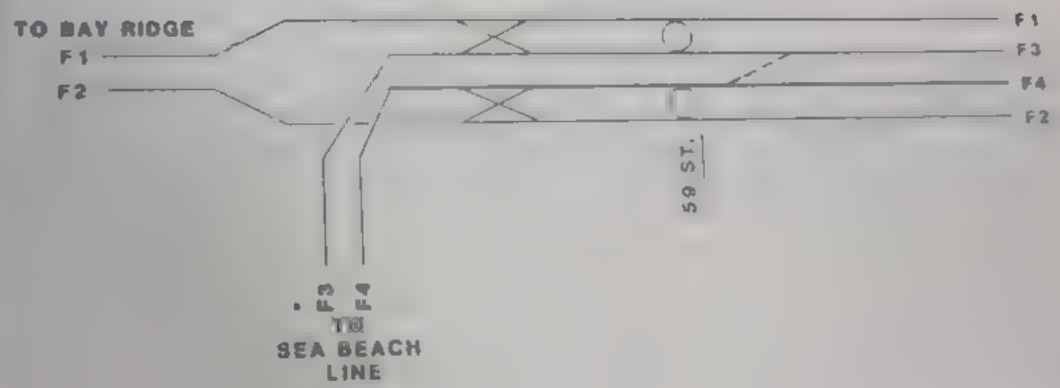


Track Diagram

FIGURE 44F

New York City Transit Authority

FOURTH AVENUE LINE
SWITCH FROM TRACK F4 TO TRACK F3



Track Diagram

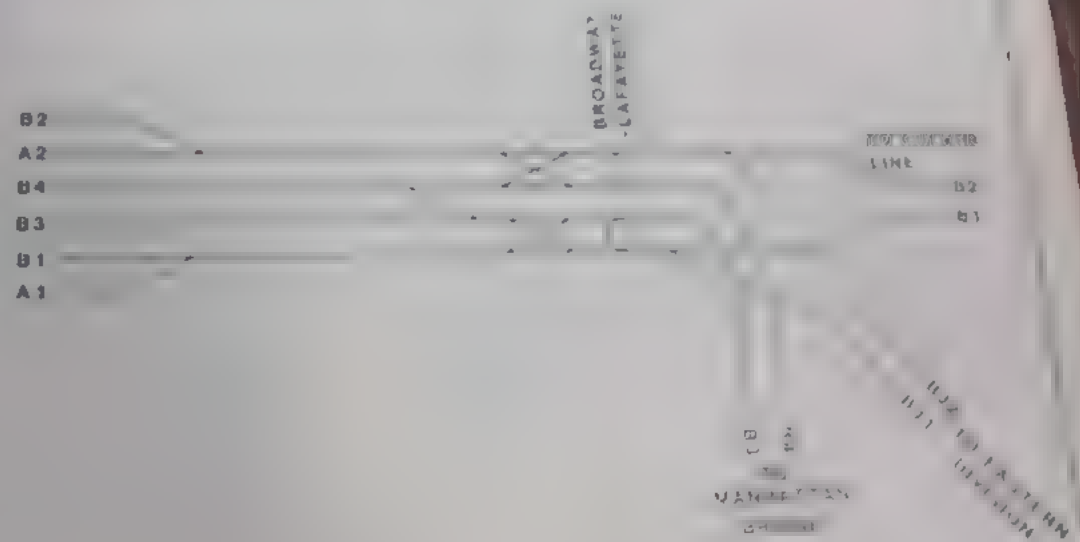
N

44G

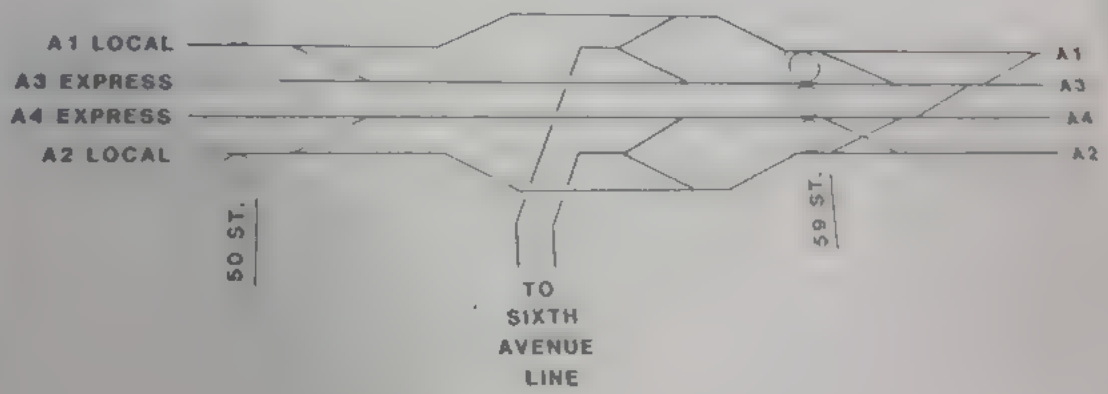
New York City Transit Authority

SIXTH AVENUE LINE

DIAMOND CROSSOVER BETWEEN B1 AND B3



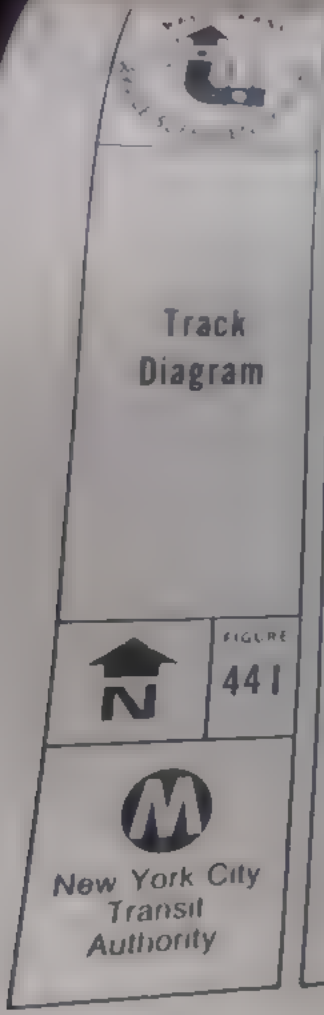
EIGHTH AVENUE LINE
SWITCH FROM TRACK A1 TO A3
SWITCH FROM TRACK A4 TO A2

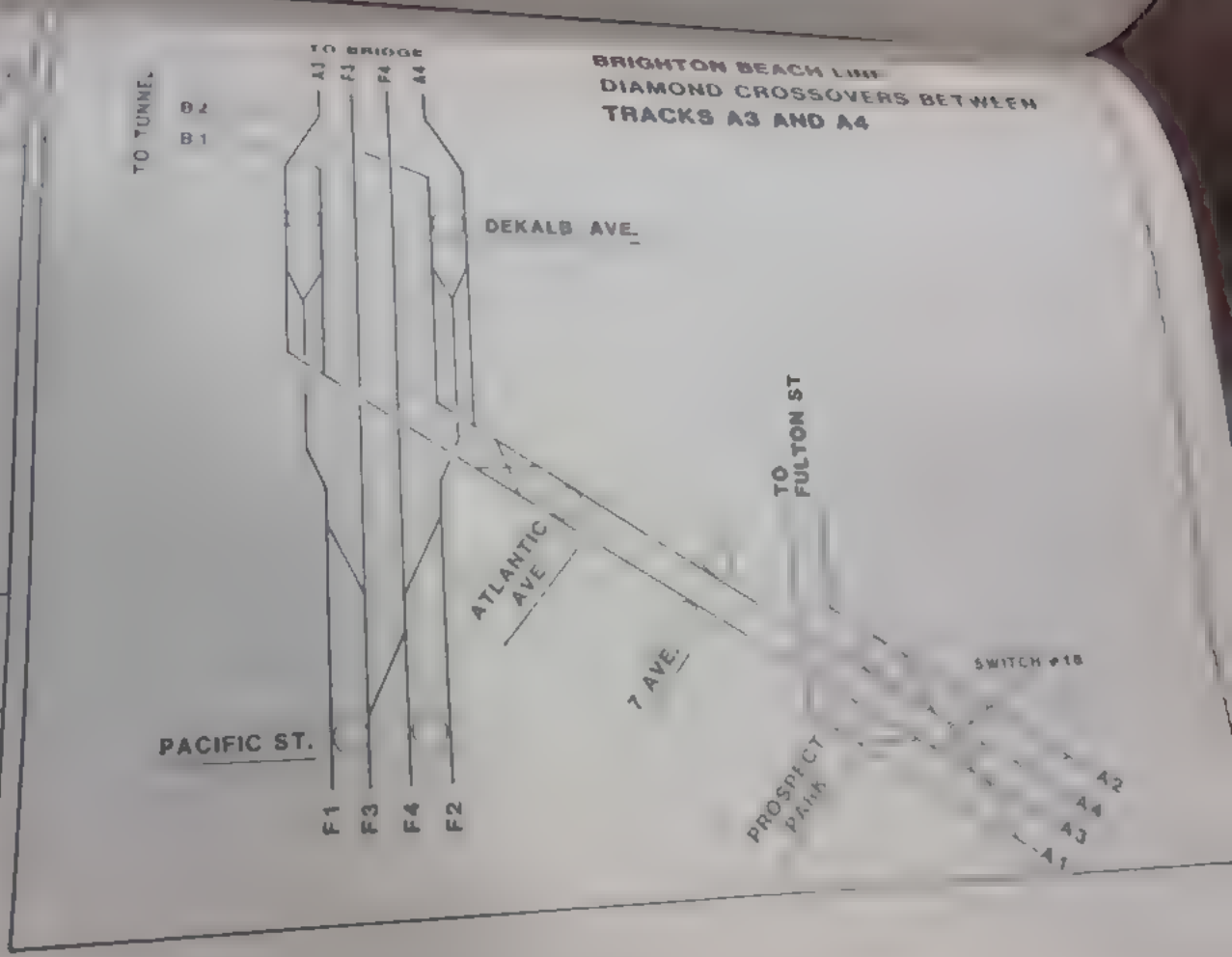


Track Diagram

FIGURE 44H

New York City Transit Authority


Track
Diagram
FIGURE
441
N
New York City
Transit
Authority


BRIGHTON BEACH LINE
DIAMOND CROSSOVERS BETWEEN
TRACKS A3 AND A4
TO BRIDGE
A3
A2
A4
A4
TO TUNNEL
B2
B1
DEKALB AVE.
TO
FULTON ST
ATLANTIC
AVE
7 AVE.
SWITCH #18
PACIFIC ST.
PROSPECT
PARK
A2
A4
A3
A1
F1
F3
F4
F2

Lxtn			
"A"-"AA"			
Queens Boulevard			
"N"-"RR"-			
"F"			
"LL"			
"B"			
Eastern Division Proposal			
"J"-"LL"-"M"	-1,869,000		
"K"	+3,524,000		
Southern Division Proposals			
"RJ"-"T"	-78,000		
"B"	-37,000		
TOTALS:	+1,605,000	+2	

[illegible]

[illegible] the "D" [illegible]
[illegible] with the "[illegible]"

[illegible] the "[illegible]"
[illegible] 1AM and

[illegible] service in Queens

[illegible] the hours [illegible]
1AM.

[illegible] the [illegible] Avenue at nights

[illegible]

Turn the "GG" at [illegible] Plaza evenings
weeknights, a[illegible]

[illegible] service to operate
[illegible]

- Replace off-peak "J" service with the "K".

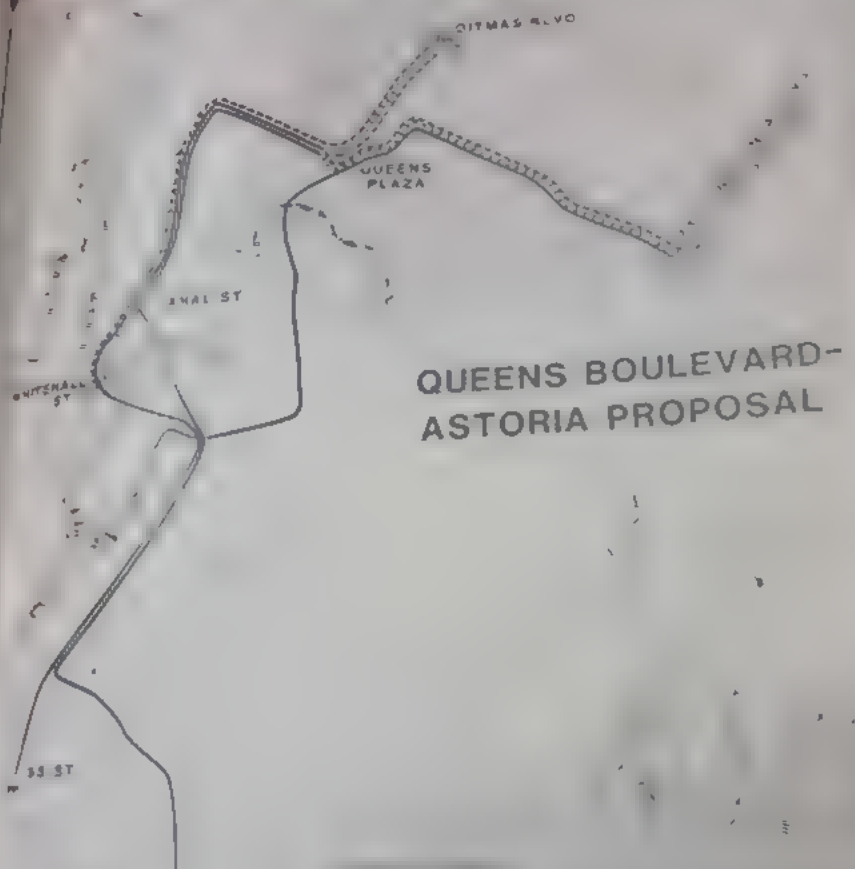
  [illegible]rate the "K" local between 57 Street/Sixth Avenue and:

  Rockaway Parkway (Canarsie) during peak periods.

  [illegible]
  (except nights).

  [illegible]riginate or terminate some [illegible] at [illegible]

  [illegible]xtend the "M" to Broad [illegible] and [illegible]



ates during peak periods only
the direction of peak traffic.
The "GG" does not operate north of Queens
and 7PM Sundays.
- The "RR" is extended to 179 St after 1AM.

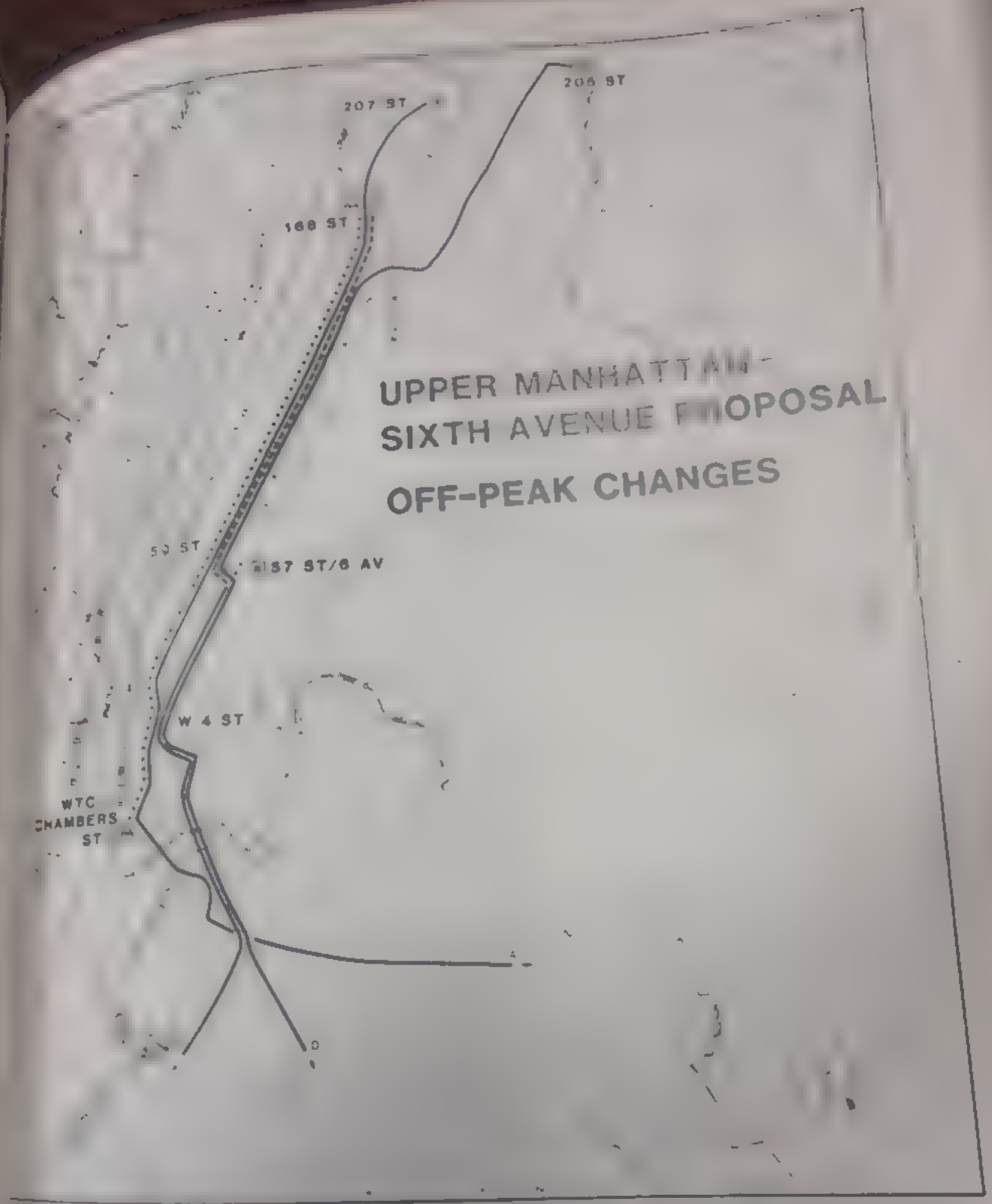
Route Change Proposal

Part of Route Unchanged ———
Added - - - - - -
Deleted .....

N

FIGURE

New York City Transit Authority



Route Change Proposal

Part of Route Unchanged ————

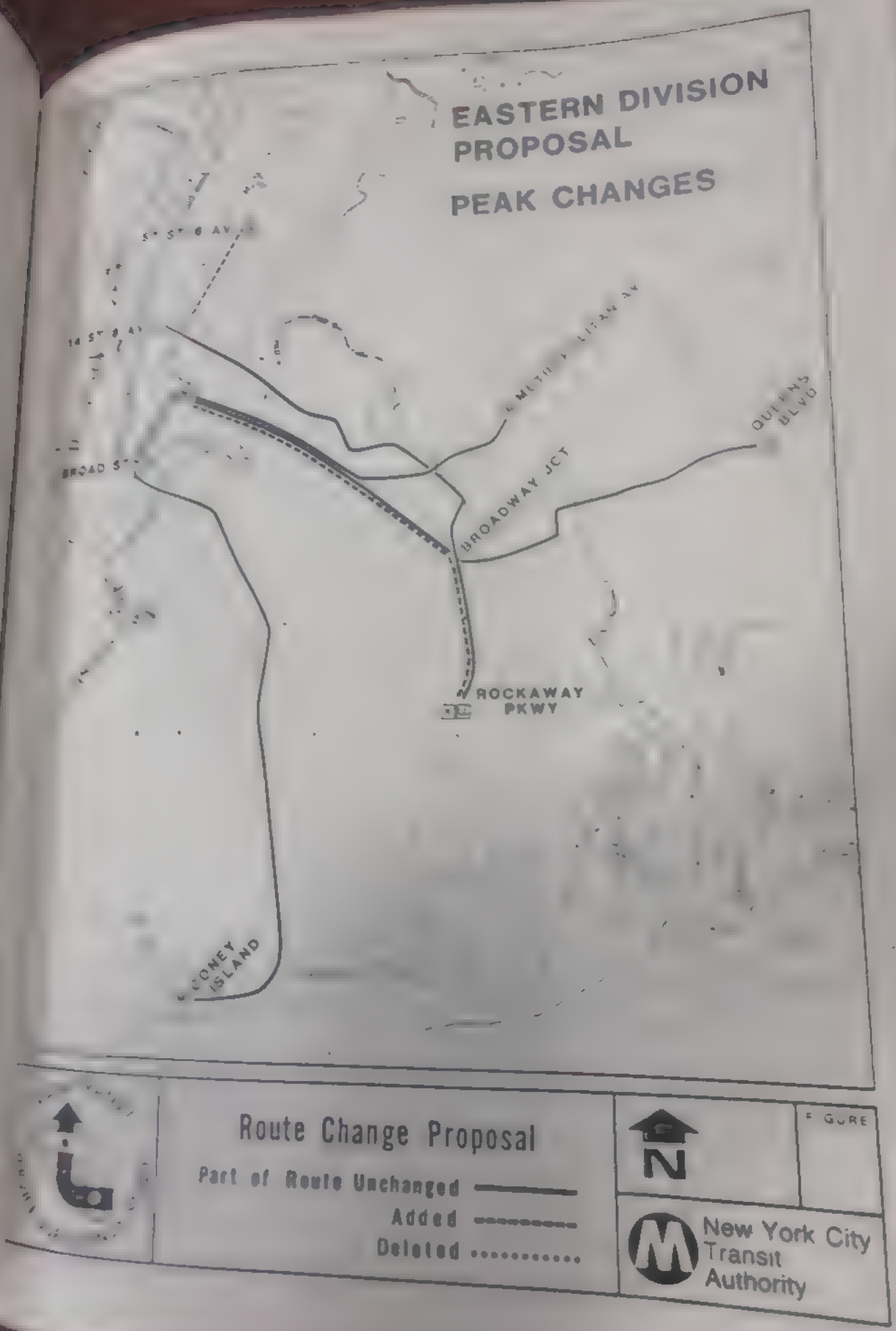
Added - - - - - - - -

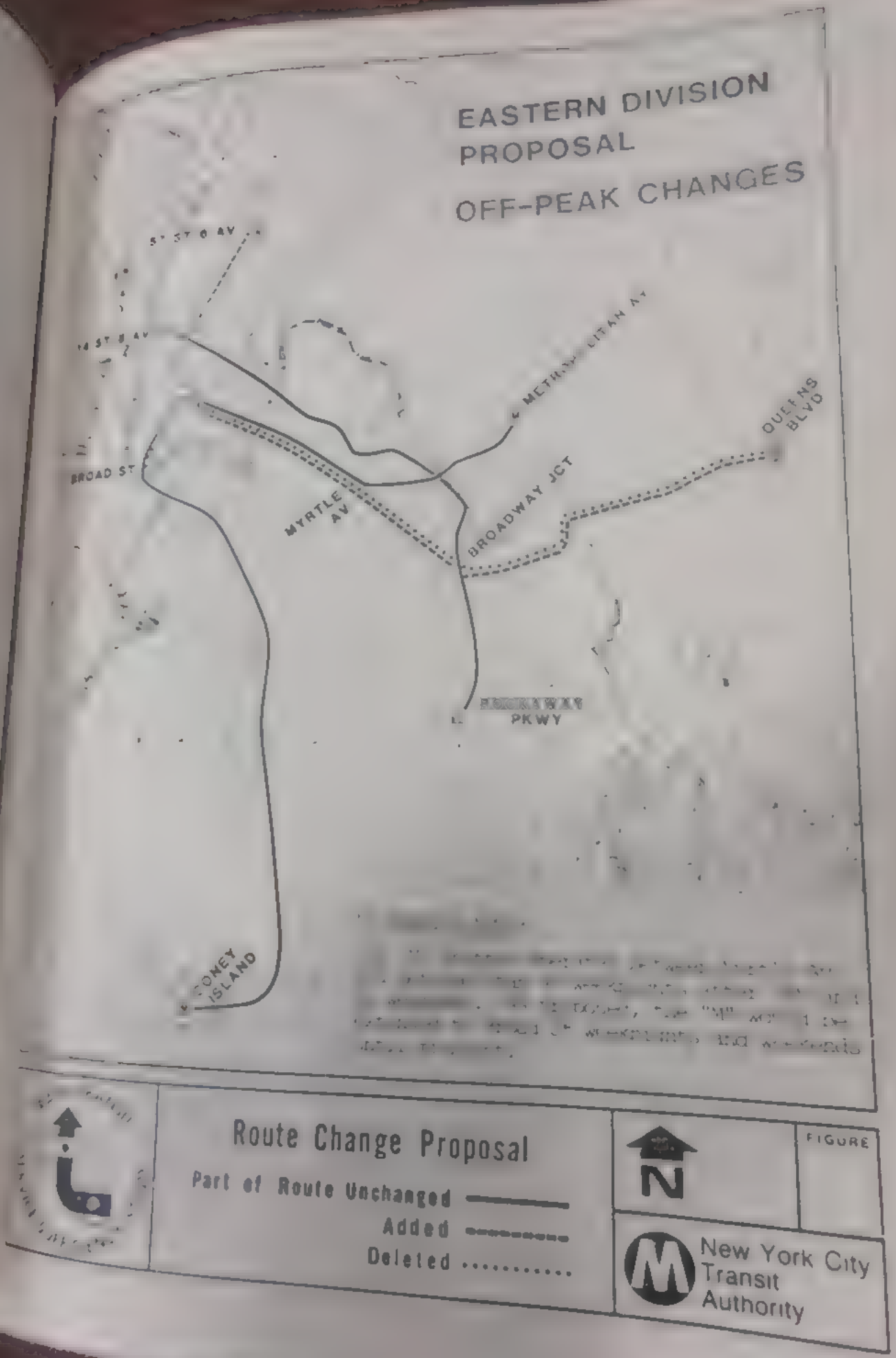
Deleted . . . . . .

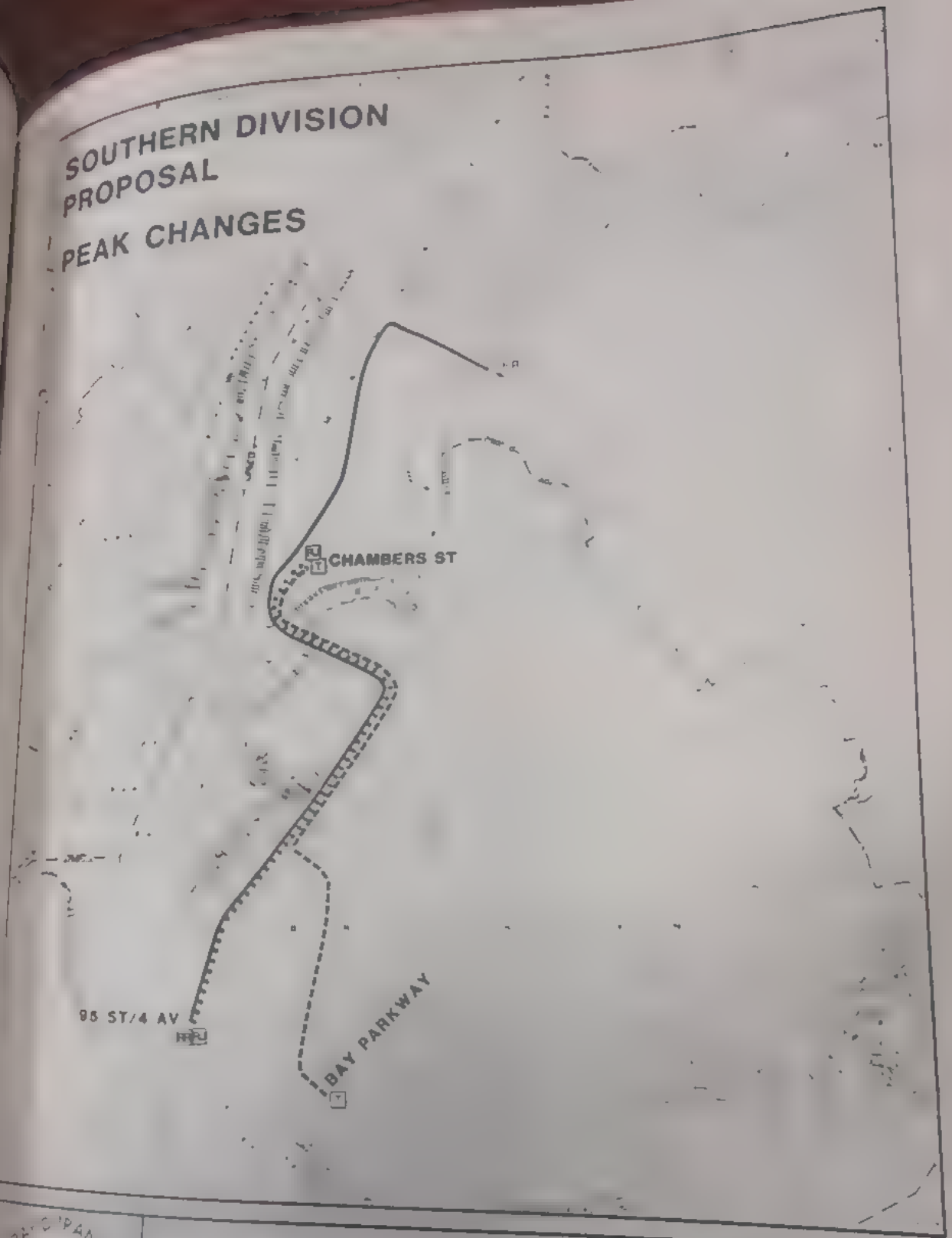
N

FIGURE

New York City Transit Authority


EASTERN DIVISION
PROPOSAL
PEAK CHANGES
14 ST & AV
BROAD ST
BROADWAY JCT
QUEENS BLVD
ROCKAWAY PKWY
CONEY ISLAND
Route Change Proposal
Part of Route Unchanged
Added
Deleted
N
FIGURE
New York City Transit Authority


EASTERN DIVISION
PROPOSAL
OFF-PEAK CHANGES
14 ST & AV
BROAD ST
MYRTLE AV
METROPOLITAN AV
BROADWAY JCT
QUEENS BLVD
ROCKAWAY PKWY
CONEY ISLAND
Route Change Proposal
Part of Route Unchanged
Added
Deleted
N
FIGURE
New York City Transit Authority



Route Change Proposal

Part of Route Unchanged ———

Added - - - - - -

Deleted .....

N

FIGURE

New York City Transit Authority

TRANSIT
STUDIO

board
, presenta
taken is
lved only
as subsequ
hose borough
zed the boa
dology of the
unity input
cted officials.
rds

s Transportation Committee
to discuss issues common to many
the Brooklyn and Queens Borough
zed committees composed of the
chairpersons of all the
h. Private individuals
ents to join.
the Brooklyn
eliminary
proposals were
with each of the
community board

gs with individual

munity
transportation
the Study in order
and to clarify
ards. While the
was similar to that
meetings, they
productive environment for
ttees are usually composed of
ard members familiar with
Further, as community boards
ecommendations of their
ttees to resolve transit matters,
opinion could be worked out on the
minimizing the need to meet with full

series of meetings, the Manhatt
letter to the Manhattan
the boards
anning process.

[illegible]

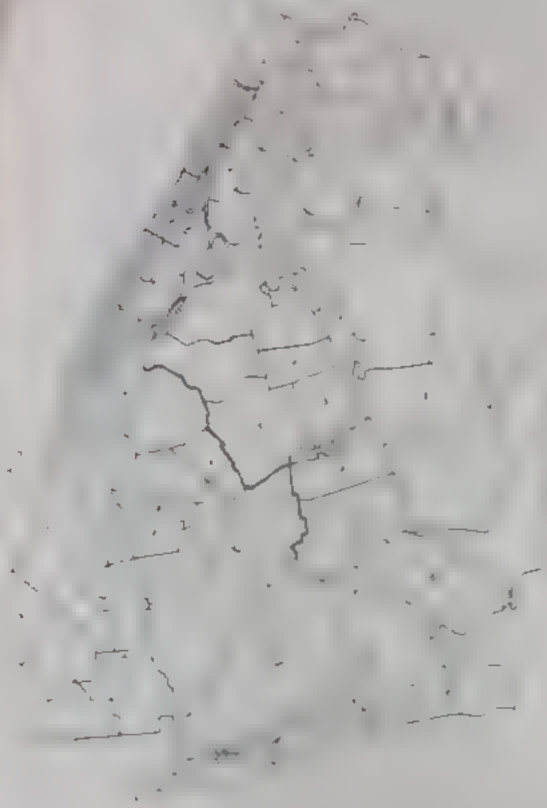
[illegible] hattan proposals would [illegible] es. A summary of the [illegible]

[illegible] the off-peak "A" local between 59 Street/ [illegible] venue and Chambers Street.

[illegible] the "AA" with the [illegible] nded "B" north of [illegible] ghth Avenue, and [illegible] the off-peak "A" [illegible] ervice south of 5[illegible] Street [illegible] th Avenue.

[illegible] Avenue Express between [illegible]

at 57 Street/Sixt
AM and 5AM)



Community Boards Affected By The Sixth Avenue-Upper Manhattan Proposal

N

FIGURE 46

New York City Transit Authority

peak
annattan.

board
long as
local south of

would operate local
reet/Eighth Avenue.

egarding

proposal.
operate both "AA"
Street at

at nights

service in Queens

avenue at nights

Community Boards Affected By The Queens Boulevard-Astoria Proposal

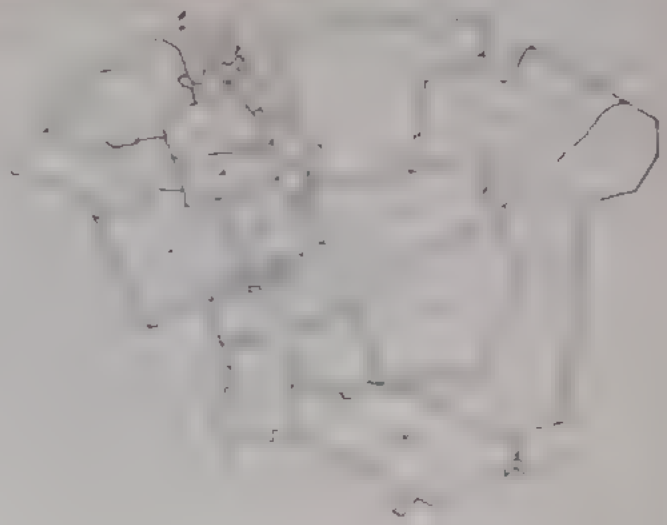
FIGURE 47

New York City Transit Authority

was expressed;
the December

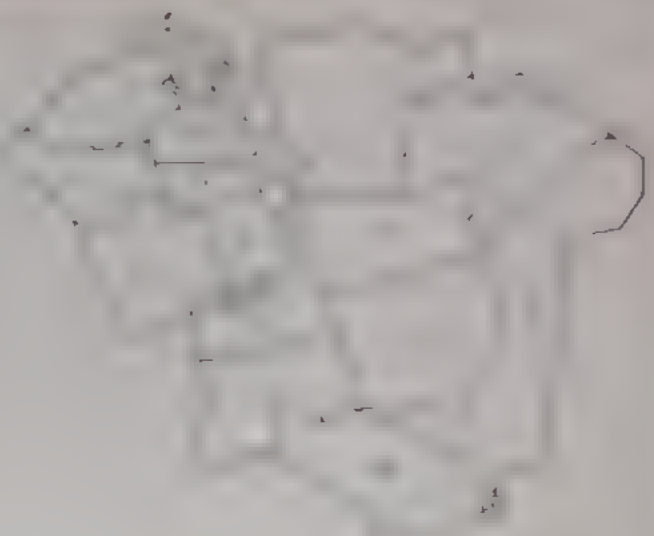
ard was sent a letter requesting
response to the modified
cussed in the December

ing with the Board's transportation
ittee. No objection was expressed to
modified proposals, but study staff was



tcipation.

Borough Board [illegible]
Borough President [illegible] transportation [illegible] the Board.
[illegible] transportation [illegible] the [illegible]
[illegible] Board [illegible]
[illegible] written material [illegible] requesting their [illegible]
[illegible] transportation [illegible] expressed concern over [illegible] service in [illegible] Flushing Line [illegible] crime by [illegible] Sixth Avenue vs. [illegible]
[illegible] ion chairperson was sent a letter [illegible] g relevant crime statistics [illegible] a late night transfer at 42nd Street/Sixth Avenue.
In a telephone conversation, the Board's transportation chairperson was skeptical [illegible] the statistics provided in the [illegible] 21st letter and requested more [illegible]

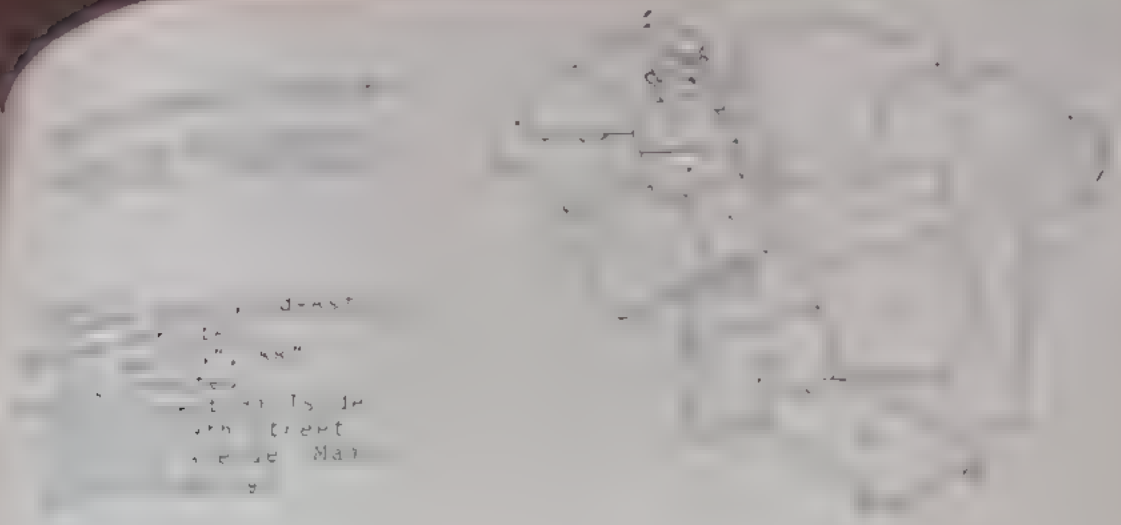


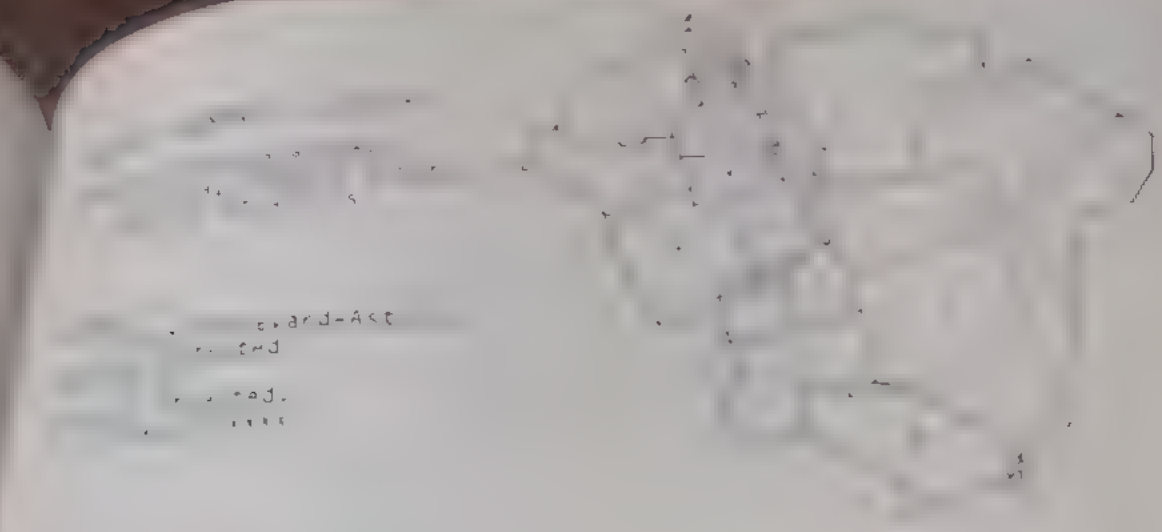
[illegible]

[illegible] ards
[illegible] not

[illegible] written material
[illegible] and requesting their

[illegible] was sent a letter requesting
[illegible] nse to the proposals by February
[illegible] otherwise it would be assumed that the
[illegible] had no comments (no response was
[illegible] ved).
[illegible] gh President's Transportation Committee
[illegible] d.

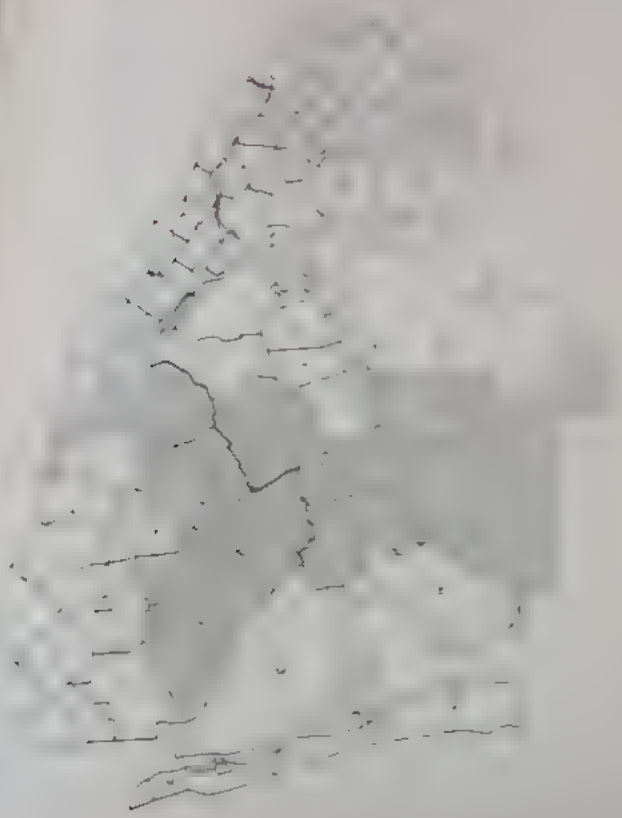




mittee

supported.
sent a letter supporting the
ard-Astoria proposals.
ent's Transportation Committee

subsequent
& Transportati



Community Boards Affected By The Eastern Division Proposal

N

48

New York City Transit Authority

[A letter requesting
the proposals by February
would be [illegible]
[illegible] the response wa

that the

esponse

[illegible] the tran[illegible]t-
[illegible] qu[illegible] evisions to the
[illegible] 25th.

- [illegible] requested by Board #18 on [illegible].
  [illegible] requesting a meeting with the [illegible]ty Board's transportation [illegible].
- Meeting with the Board's transportation [illegible]. Committee endorsed a "K" service in addition to the "LL" to Rockway Parkway, but rejected any peak service reductions in "[illegible]" service to accommodate the "K", or the addition of more feeder bus service to Rockaway Parkway.
  Meeting with the transportation chairperson at Rockaway Parkway Station to observe peak period "[illegible]" passenger volumes first-hand.
- Borough President's Transportation Committee Meeting.

along t
through
Meeting.
Community
detailing
opinions
Meeting w
committee,
turning
Avenue a
In
at on
with
ntation o
mmitt
ecause
turned at Atlant
equently voted
oppose the

[illegible] express and "M"

[illegible] ng a response to [illegible] n for a field [illegible] ary 22nd.

[illegible] conversation, a board member [illegible] end a field review on February [illegible]

[illegible] manager suggested a meeting with [illegible] group.

[illegible] At [illegible] com[illegible] prop[illegible] to [illegible] subse[illegible] prop[illegible] [illegible] Eastern [illegible] Meeting.

questing
February
d that the
was

ting
ary
nat the

mittee

[illegible] ng their

[illegible] nity Board [illegible] requesting [illegible] respons[illegible] posals by [illegible]bruary [illegible] otherwis[illegible] assumed that the [illegible] had no comments.

[illegible] telephone conversation, the transport-[illegible] airperson stated the proposals would [illegible] ly be supported.

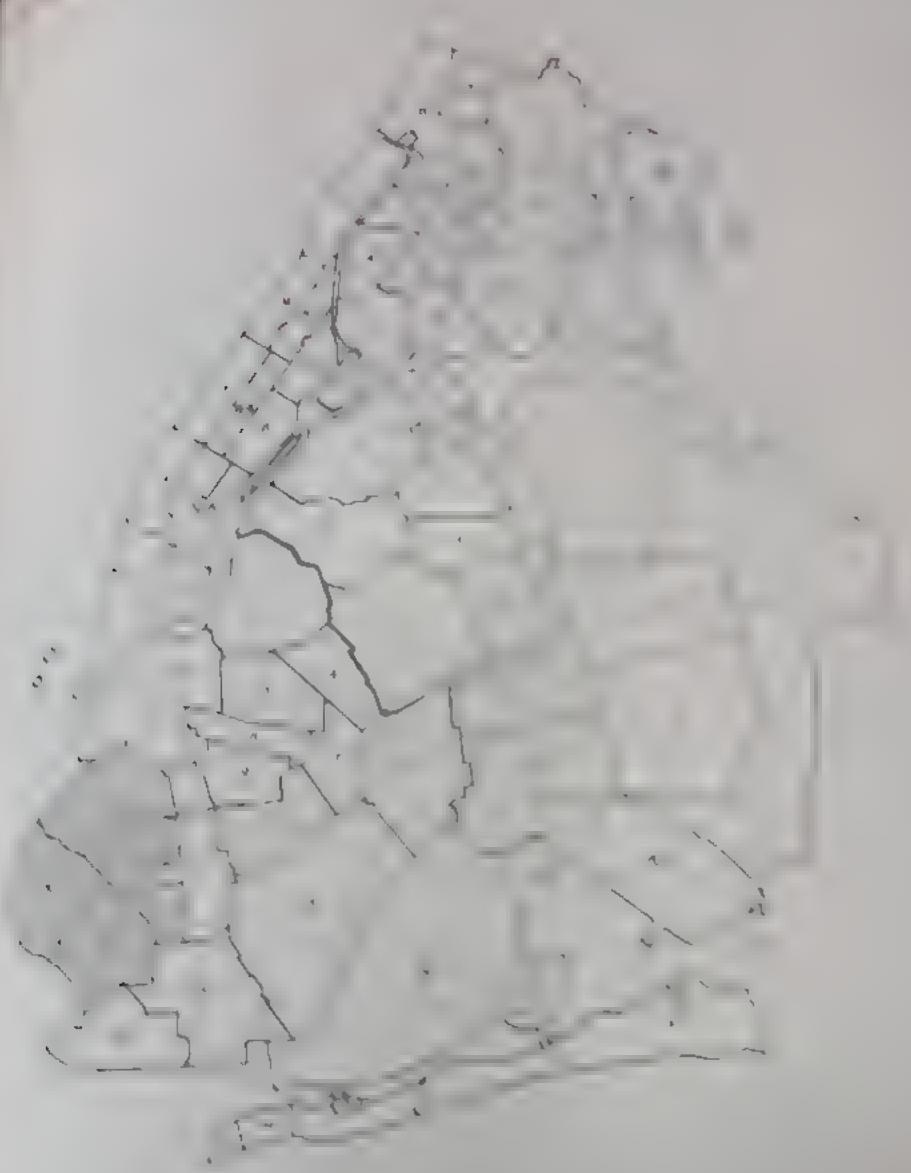
[illegible] letter [illegible]ing the Eastern Division proposals.

[illegible] Transportation Committee Meeting.

[illegible] made prior [illegible] ent of
[illegible] s to the Brooklyn Bor[illegible] ber
[illegible] the Brooklyn Borough Pres[illegible]
[illegible] ttee (October 3, 1979 and M[illegible] 0, 1980).

[illegible] eliminary proposals were developed, subsequent
[illegible] eld with the Brooklyn Borough President's
[illegible] mmittee on April 15, 1981 and July 29, 1981.
[illegible] were held on June 22, 1981, and April 27, 1982,
[illegible] mmunity Boards [illegible], [illegible] and [illegible]. The
[illegible] unity Boards in these meetings, as well
[illegible] ent involvement in the community participation
[illegible] in chronologies that follow this page.

[illegible] of three community Boards affected by the
[illegible] Sals, two community boards resolved
[illegible] unity board did not respond favorably.
[illegible] Bensonhurst, which favored the

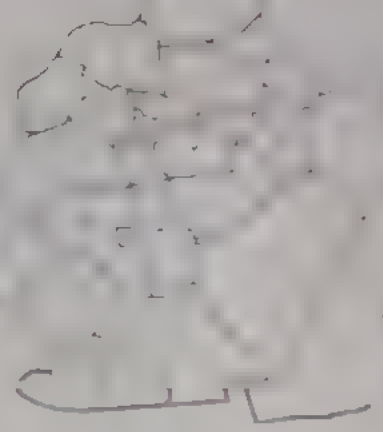


Community Boards Affected By The Southern Division Proposal

N

FIGURE 49

New York City Transit Authority



ourth Avenue,
ourth Avenue,
Fourth Avenue
Fourth Ave
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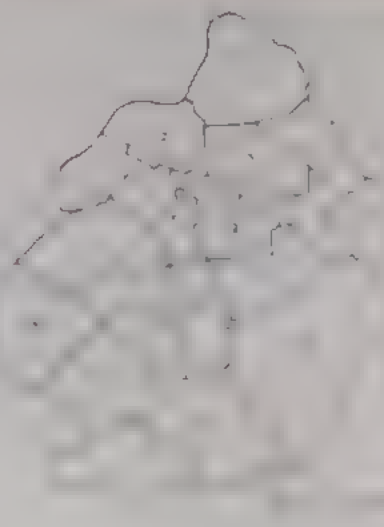
rticipation

- Borough
  Meeting.
- Borough
  Borough President's Transportat
- Borough President's Transportation Committee Meeting.
- Joint meeting for Brooklyn Community Boards #7, 10, 11 & 12. Board #7 was represented.
- Borough President's Transportation Committee Meeting.
- Community requesting their re pons als by March 26th, otherwise assumed that the board had no comm .
- Community Board se a letter stating that it had no objections to the proposals.



/Fourth Avenue.
Fourth Avenue.
Fourth Avenue.
New Utrecht

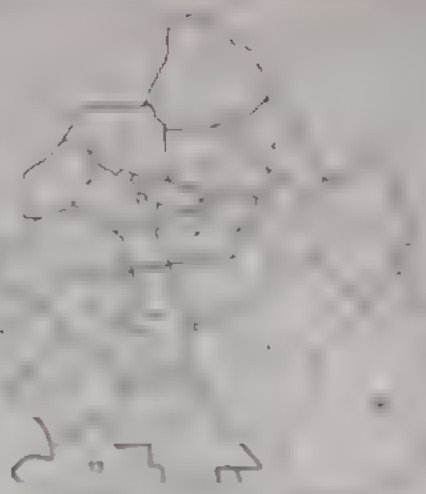
Board was asked to contact
ff to discuss their concerns as
attend the June 22nd meeting.
President's Transportation Committee
meeting.

with the Board's executive committee.
Community Board sent a letter objecting to
the proposals.

#7, 10, 11 & 12.

#7, 10, 11 & 12.

Community Board sent a letter to Chairman
objecting to the proposals.



vision
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Borough President's Transportation Committee
Meeting.
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Borough President's Transportation Committee
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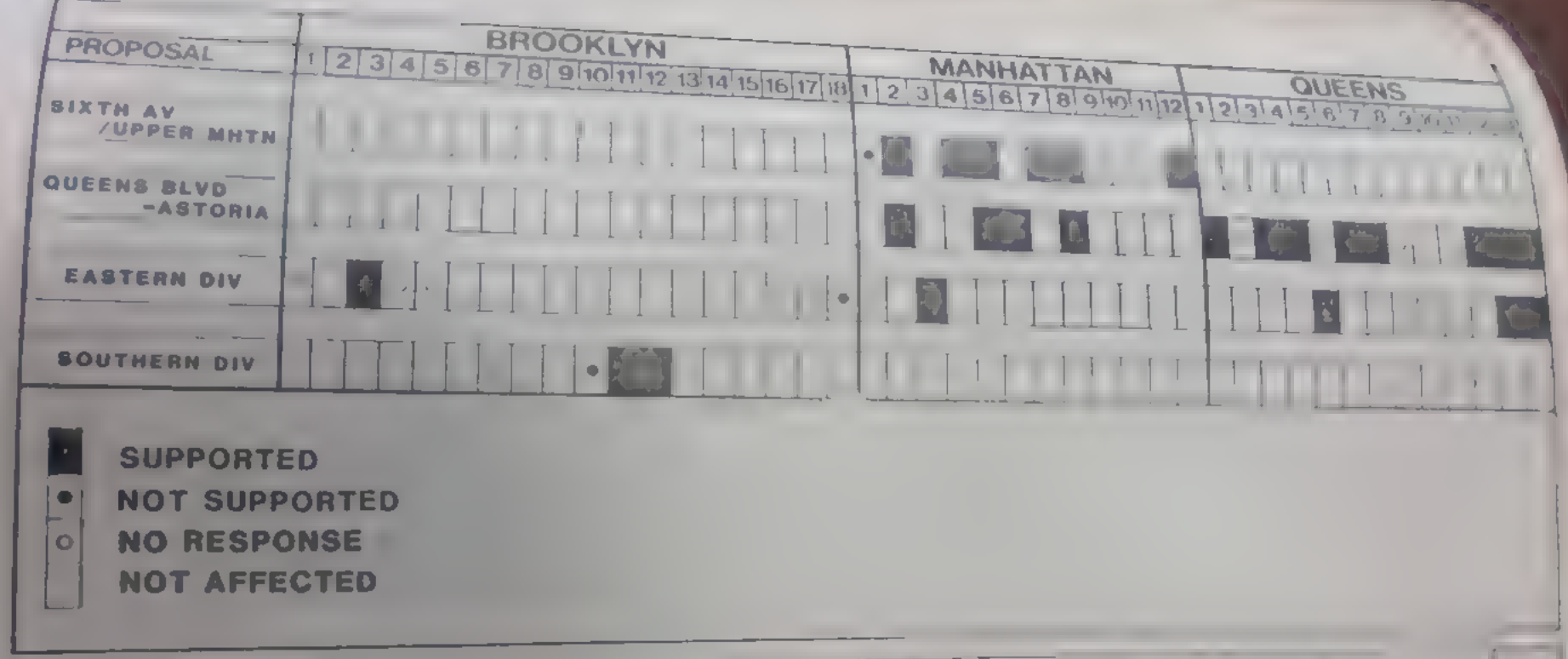
, 10, 11 & 12. Board #11 board member
that the [illegible] should not be
[illegible] Manhattan will be less
[illegible] their ride
[illegible]
[illegible] sent a letter supporting [illegible]
[illegible] at Coney Island.
[illegible] Interstate to [illegible]
Street.

- Meeting with community district manager to discuss the concerns expressed in the March 29th letter.
- [illegible] meeting [illegible] Brooklyn Community Boards #7, 10, 11 & 12.

tating
ne proposals, pending
rvice related

meting for Brooklyn Community Boards
#s. 10, 11 & 12.



RAPID TRANSIT SERVICE SUFFICIENCY STUDY

Community Board Response

ata base, in addition t
within the rapid transit
patterns before
provides a basis f
the riding publ
on methods f
al changes in fare contr

alysis Methodolog

base
p data over 435
n station platforms
an Street
Howard
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ns at all times.
s Park to Dyre
when the #5 Shuttle
ned on board the
to the outbound
s) at some outlying
volumes and adequate
rail service (for
t on the Seventh

rtments within the Authority use different
describe the number of stations, depending on
that number. The system contains 427
unting transfer complexes (like Times Square)
on". The Engineering Department subdivides
omplexes to create 465 "stations" (to
ructure-oriented criteria for capital project
d the Stations Department similarly creates
tations" (to provide a control area-oriented criteria
stent reporting of passenger revenues). The RTSSS
ase was aggregated over 435 "stations" to facilitate
ing.

ated to the
stations and
would be

al configuration of the station, and
rovided. The selection of prototypes
ring land use and long-term trends in station
hood demographics. Special consideration
s with known access problems identified by
ider complaints.

Base describes passenger travel patterns
ng and after leaving the rapid transit
ded pertinent information for the station
ating to the service area, physical

substantial changes
ographics; the New
changes of this magnitude
industry standards for

will use the data base compiled in the course
its ongoing service planning efforts. The
herein will be periodically reevaluated as
of future service improvement proposals
the overriding priority of the Authority:
ent and reliable transit service to New York

which provide hourl

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eived for each particular

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Most of the ta

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that 0.5 percent

pondents said they were going from 95th

t Avenue, representing a total of 70

percent of all trips originating at 95th

transferring t
made the same
total of 3
quare, representing
percent of the total ridership
et.

ion-to-Zone

the trips being made from each station to
listing
volume.
rmation is given on the last station(s) used
and the first and last train taken.

ips

ts data on trips in terms of "segments" f stations on a line. [illegible] l order.

[illegible] 5 riders were
they used to reach

[illegible] NS BLVD

[illegible]	MODE	BUS NO.	[illegible]	[illegible]	[illegible]
2	BUS	Q04A	6	31	1.0
2	BUS	Q049	5	21	0.7
2	AUTO		2	14	0.5
2	ALL OTHERS		3	18	0.6
2	ZONE TOTALS		16	84	2.8
ALL OTHERS-THIS STATION			[illegible]	[illegible]	[illegible]
STATION TOTALS			507	2,986	

that of all riders [illegible]
[illegible]tion from Zone 1212. [illegible]
4A bus, five came by the [illegible]
[illegible]to. Three others arrive[illegible]
[illegible] the individual value [illegible]
[illegible] below the cut-off of 0.5 [illegible]
the "ALL OTHERS" category. [illegible]
[illegible]ponses. Another 14 resp[illegible]
[illegible]ard Station from variou[illegible]
[illegible] the value of each of the [illegible] respon[illegible]
[illegible] and the value of each of the [illegible] respon[illegible]
[illegible]-off of 1.0 percent. In total, 507 resp[illegible]
[illegible] the system at Queens Blvd, representing [illegible]

[illegible] 6A: Bus/Rail Access - First Station

[illegible] shows which bus routes or rail lines (e.g., Long [illegible] Railroad) were used to reach each station.

[illegible]

6AM to 10AM 30 AVE

BUS/RAIL LINE	COUNT	TRIPS	PERCENT
NONE	259	4273	92.8
Q018	10	161	3.5
Q102	7	124	2.7
UNSP	3	46	1.0
* TOTAL - BUS ONLY	20	331	7.2

[illegible] 259 respondents arrived at the 30th Avenue [illegible]tion by [illegible]er than bus or rail. Of the ones that [illegible]ived by bu[illegible], ten came by [illegible] seven by the Q102, and [illegible]ree did not specify which bus t[illegible] took. The bottom line [illegible]marizes the total number of pa[illegible]ngers who arrived by bus [illegible] respondents representing 331 [illegible]ps) and what percentage they were of the total number o[illegible]ple entering the station.

[illegible] 7: Destination Station Profile

This table shows the destination (by zone) that [illegible] from [illegible] station, [illegible] [illegible] there.

[illegible] 6AM to 2PM DEST. STATION: [illegible]

	TO ZONE	MODE	BUS NO.	COUNT	TRIPS	PERCENT
ANARSIE	425	WALK		1	11	1.2
	425	BUS	B006	1	5	0.6
	425	BUS	B042	1	25	2.6
	425	ZONE TOTALS		3	42	4.4

[illegible] example, of the respondents leaving the subway at [illegible] station and going to Zone 425, one reached the [illegible] by walking, one took the B6 bus, and one took the B4[illegible].

ferring at Columbus
train, 20 transferred to
the northbound D, 77 to the southbound
tal num r of responses transferring from a
f all transfers made of Columbus Circle in the
iod.

ransfer Movement Summary

Summarizes how many riders made either zero,
three transfers to complete their trip.

[illegible]

Summary of Tr [illegible]

[illegible] table summarizes the [illegible] each [illegible] ugh.

[illegible] of Access - [illegible] Station

[illegible] table [illegible] ows the mode [illegible] to reach [illegible] AM, 11AM t [illegible] stations [illegible] out, and the numbers [illegible] top [illegible] weighted [illegible] t actual responses).

[illegible] of Access [illegible] and Handicapped - [illegible] tion

This table [illegible] the [illegible] Table 11 to show the [illegible] and [illegible] to reach their [illegible] after [illegible]

[illegible] ary of

[illegible] s table [illegible] of the survey and [illegible] an hou [illegible] break [illegible] following information for [illegible] station [illegible] the number [illegible] entering, the number of [illegible] that were distributed, [illegible] that were returned, the [illegible] rate (which is the [illegible] cards returned divided [illegible] distributed) and the [illegible] ey rate (which is the [illegible] s returned div [illegible] the number of passengers [illegible]

BENEFITS	IMPACTS FOR RIDERS	
	Present: 'AA' Eighth Av[illegible] - 3,800 must tr[illegible] Sixth Avenue [illegible]	
	Present: "A": Eighth Avenue E[illegible] "AA": Eighth Avenue Local D": Sixth Avenue Express - 2/3 of service provide[illegible] direct service to Eighth Avenue for [illegible] - 1/3 of service provide[illegible] direct service to Sixth Avenue for 6,200	[illegible]
- CANARSIE	14TH-CANARSIE RIDERS Atlantic Av-Canarsie [illegible] PEAK	
	Present: LL : 14St Local - 2,800 must transfer for Sixth Avenue destinations	Proposed: "K": Sixth Avenue Local "LL": 14St Local - These riders have direct direct service to Sixth Avenue destinations.
- [illegible]	BROADWAY-BROOKLYN RIDERS (Marcy Av-Eastern Pkwy) PEAK	
	Present: "J": Nassau St Local "M": Nassau St Local - [illegible] must transfer for Sixth Avenue destinations.	Proposed: 'J' : Nassau St Local "K": Sixth Avenue Local 'M' : Nassau St Local - These riders have direct direct service to Sixth Avenue destinations.

IMPACTS FOR RI

	Present [illegible]	
[illegible]	Present [illegible]	[illegible]
[illegible]	[illegible]	[illegible] tern Parkway [illegible] time by [illegible] tes for [illegible] weekday riders.
[illegible]	[illegible] to	[illegible] "K": Sixth Avenue Local • These riders have regular peak service with no headway greater than 10 minutes.
[illegible]	Present [illegible] weekday [illegible] from [illegible] transfer to reach "A" stops south of Chambers Street.	Proposed: [illegible] will have [illegible] offpeak.
[illegible]	Present: "A": Express Platform [illegible] Platform "E": Local Platform - [illegible] where [illegible] Sixth Avenue train will stop.	Proposed: A : Local Platform E : Local Platform - All offpeak trains will stop at the local platform, simplifying service for 11,000.

BENEFITS	IMPA
	Present M Shuttle Myrtle-Me - 1,700 mo to/from M
DISBENEFI	IM
ERS FER.	Present· "AA"· Eighth Lenge - 1,300 have direct Eighth Avenue destin
	Present -
	Avenue Peak headway to dr provides a trains will headway affected.
	Travel time for through riders will increase by about two minutes, offpeak.
	2 of the present service (A' & 'E") will provide at Eighth Avenue express stops.

	_ posed:
	1 "N" route variation
1 "RR" route variation	1 "RR" route variation
	1 "V" route variation.

1 ST/6th AV (1 AM-5 AM)

PROPOSED:

These passengers have thru service from these stations. 57th St./6th Ave. usage may increase, improving passenger security.

These passengers
must transfer at
7th Ave./53rd St.,
34th St.

BENEFITS	IMPACTS FOR RIDERS
1. PROVIDES DIRECT SERVICE BETWEEN THE WEST END LINE AND: - LOWER MANHATTAN - DOWNTOWN BROOKLYN	WEST END LINE RIDERS A.M. PEAK Present: "B": Sixth Avenue Local/Express -3,200 must transfer for Lower Manhattan & Downtown Brooklyn. Proposed: "B": Sixth Avenue Express "T": Nassau Street Local -These riders have direct service.
2. REDUCES PEAK CROWDING ON WEST END LINE SERVICES.	PASSENGER LOADINGS THROUGH 36 STREET/4 AVENUE (7:20 to 8:45 AM) Present: "B": Sixth Avenue Local/Express -Average of 112 passengers/car. Proposed: "B": Sixth Avenue Express "T": Nassau Street Local -Average of 94 passengers/car -Net Change: -18 passengers/car
3. PROVIDES A SIMPLIFIED "RR" SERVICE PATTERN.	Present: 2 "RR" Routings in Brooklyn: -Broadway Local - Nassau Street Local Proposed: 1 "RR" Routing in Brooklyn: -Broadway Local

DISBENEFITS	IMPACTS FOR RIDERS
1. REMOVES DIRECT SERVICE BETWEEN FOURTH AVENUE LINE (45 STREET-95 STREET) AND NASSAU STREET STATIONS.	FOURTH AVENUE LINE (45 STREET-95 STREET) A.M. PEAK Present: "RR": Broadway Local "RR": Nassau Street Local -1,100 have direct service to Nassau Street. Proposed: "RR": Broadway Local -These riders must transfer or use the Broadway Local service to Lower Manhattan "RR" stations two blocks away.
2. SLIGHTLY INCREASES STANDEES BELOW 36 STREET ON THE FOURTH AVENUE "RR" LINE.	PASSENGER LOADINGS THROUGH 36 STREET/4 AVENUE (7:20 to 8:45 AM) Present: "RR": Broadway Local "RR": Nassau Local -Average of 60 passengers/car. Proposed: "RR": Broadway Local -Average of 73 passengers/car -Net Change: +13 passengers/car.

APPENDIX C

Rapid Transit Service Recommendations
From The Bronx Study

Prior to the Rapid Transit Service Sufficiency Study (RTSSS), Operations Planning undertook the Borough Transit Sufficiency Study Program, a series of individual borough transit studies that were designed to appraise the overall effectiveness and sufficiency of both rapid and surface transit operations on a borough by borough basis. With the first study in the program, the Bronx Study, it became apparent that rapid transit route and service changes could not be adequately made on the borough level. Therefore, analysis of rapid transit service was shifted to a city-wide basis in a separate study. However, the Bronx Study had already analyzed Bronx rapid transit service, so a summary of its conclusions is presented here, to avoid duplication of previous efforts.

The Bronx Study conducted origin-destination surveys and analyzed the resulting data base to determine the service needs of the Borough, focusing on alternatives to the current route and service structure. A set of route and service planning guidelines and a design process were developed; these are compatable with the those employed by RTSSS.

The following route and service changes were evaluated by the Bronx Study:

- During peak periods, operate alternating #1 trains express between 137th Street and 96th Street in the peak direction of traffic.

- During peak periods, operate all #1 trains skip-stop between 242nd Street and 96th Street in the peak direction of traffic.

- During peak periods, operate all #5 trains express between East 180th Street and Third Avenue/149th Street in the peak direction of traffic. Peak period #5 trains that serve the White Plains Road Line operate express between Gun Hill Road and East 180th Street in the peak direction of traffic; additional #2 trains would be put into service at Gun Hill Road, instead of at East 180th Street.

- Eliminate all #4 service north of Kingsbridge Road on the Jerome Avenue Line, closing Woodlawn, Mosholu Parkway, and Bedford Park Boulevard Stations.

- Extend the hours of the peak period #6 Pelham Express to operate between 6:30AM and 8:00PM.

- Between 6:30AM and 7:30PM, operate all #6 trains skip-stop between Pelham Bay Park and Hunts Point Avenue. All trains stop at Pelham Bay Park, Westchester Square, 177th Street-Parkchester, and Hunts Point Avenue Stations.

- Between 10AM and 2PM, terminate alternating #6 trains at 138th Street.

- During peak periods, eliminate the "CC" and operate the "D" local along the Grand Concourse Line.

- During peak periods, eliminate the "CC" and operate alternating "B" trains to Bedford Park Boulevard.

- Reduce the operation of the "CC" by one hour during both peak periods.

In addition, another alternative was suggested by the MTA Permanent Citizen's Advisory Committee for review:

- During peak periods, operate alternating #4 trains express along the Jerome Avenue Line.

A detailed description of these alternatives and their analysis can be found in The Bronx Transportation Study Final Report (1978).

After analysis, two alternatives were selected as preliminary service change proposals for further study and presented to the affected community boards for review:

- During peak periods, operate all #5 trains express between East 180th Street and Third Avenue/149th Street in the peak direction of traffic. Peak period #5 trains that serve the White Plains Road Line operate express between Gun Hill Road and East 180th Street in the peak direction of traffic; additional #2 trains would be put into service at Gun Hill Road, instead of at East 180th Street.

- Extend the hours of the peak period #6 Pelham Express to operate between 6:30AM and 8:00PM.

Community board review resulted in the modifications to the first proposal regarding #5 service. The boards opposed operating the peak period #5 trains that serve the White Plains Road Line express between Gun Hill Road and East 180th Street in the peak direction of traffic. The proposals for operating all #5 trains express between East 180th Street and Third Avenue/149th Street in the peak direction of traffic, and for extending the hours of the peak period #6 Pelham Express to operate between 6:30AM and 8:00PM were approved. Subsequently, these two changes were implemented in January, 1980.

APPENDIX D

Rapid Transit Service Sufficiency Study Staff

The Rapid Transit Service Sufficiency Study was developed and executed by the Operations Planning Group of the New York City Transit Authority, 25 Chapel Street, Room 1223, Brooklyn, New York. An undertaking such as this study relies on the work and efforts of many individuals; the following individuals were most responsible for the successful completion of this study:

Project Directors:

1978-1980	James F. Minogue, Executive Assistant for Administration - Rapid Transit
1980-1983	Dr. Alex E. Friedlander, Deputy Director for Operating Programs and Plans
1983-1984	Fred Baer, Chief, Operation Planning Group

Project Staff:

Edward Applebaum, Amy Bauer, Denise Strobel Bruce, James Chin, Robert Cleveland, Steven Cooperman, Dan Finnegan, Larry Gould, T. R. Hickey, Larry Hirsch, Tommy Lee, Marian Lefkin, Marc Mednick, Judy Wagh

Final report assembled by T. R. Hickey